THE ARCHITECTURE OF ADVENTURE.

By W. R. Lethaby [*F.*].

Read before the Royal Institute of British Architects, Monday, 18th April 1910.

BY the architecture of adventure I mean what to me seems to have been the living force and active principle of all architecture, the spirit of experiment in building. It is somewhat curious that of all the thousands of books which exist on architecture there is hardly one known to me which deals with the subject without some qualifying adjective, as Greek, Roman, or Gothic, or one which asks what is the greatest common denominator of all of them which might come near being architecture itself, past, present, and future. And here, at the risk of some repetition, I must say what I think we are compelled to mean by this ambiguous and abused word. I have often tried to speak of ordinary customary building as being one with architecture; architecture, in fact, is only building "writ large." But if, having two words, we desire to give them separate meanings, consistent though separate, then we must agree to mean by architecture building enhanced by sculpture and painting—that is, building "completely furnished," as Morris says. Architecture would then stand to building as opera stands to music. Architecture must thus, according to our choice, either mean building in general, or building intensified by accessory arts. In any case, mere needful and experimental building is the main substance, force, and origin of the art. When the higher architecture has appeared in the world, it has come as the result of spontaneous interaction of the arts; the architect has wrought according to custom, need, and demand; and sculptors, painters, and the rest have done the same. The resulting unity was not imposed by an architect's artistic ideal, but because all expressed their thought in a common current language.

Architecture or building, so far as at any given moment it deals with known traditional needs, should be customary; so far as it has to meet changing conditions and ideals it must be experimental. For the customary part practical craft education would be best; but how to meet changing needs, especially when one of the changes is the breakdown of custom itself, is a new and urgent question. However desirable it might be to continue in old ways or revert to past types, it is, I feel, on reviewing the attempts which have been made, impossible. We have passed into a scientific age, and the old practical arts, produced instinctively, belong to an entirely different era.

I have long been interested in the search for sources of inspiration in our art, always with the immediate inquiry before me as to what may be an inspiration to the architects of to-day and to-morrow. I have come to the conclusion that any basis on which there can be some general agreement over a long space of time will produce architecture of a sort. The one thing essential is this agreement, so that a process of development may be set up by continuous experiment.

A school of art is only generated by intensity, the heat of a common pressure. The only possible basis of agreement at the present time is the scientific method.

In a former Paper* I tried to examine the Greek theory that architecture was to be reached through a system of ratios. This idea could only be applied to a thing as fixed and simple in general type, as a temple. It belongs to a conception of holy architecture. The Greeks probably took over the notion of such a canon from the Egyptians; in any case, it belongs to many ancient peoples: the Arabs, for instance, find consolation (so do I) in the fact that the temple of Mecca is supposed to be built so that its length, breadth, and height are equal. The Greek thought on the matter was very clear-cut and intense. It was no mere talk of the wonders of proportion, which ends by pointing out that in any work there is, as a matter of fact, relation between the parts. For instance, in any given picture, there *is* some relation between the red and the blue; but this relation is not fixed for all pictures, and it was not fixed for this particular one until it was finished. I want to be clear about this: that proportion properly means what it meant to the Greeks, a definite prearranged relation of measured quantities. This view is, perhaps, most clearly brought out in the case of sculpture, to which they naturally came to apply similar schemes of harmonic measures. Polyclitus, the contemporary and equal of Pheidias, wrote a book on the subject, called *The Canon*, and made a celebrated statue to illustrate it. The head was one-seventh of the total height, and all the other parts had definite ratios. Moreover, a saying of his is preserved: "Success in art is attained by exactness in a multitude of arithmetical proportions." Greek artists all agreed to such a theory —that is, they set about discovering perfection; and we know what wonders they accomplished in consequence.

The Romans as certainly agreed in a desire for bigness and splendour, and they, too, succeeded according to their desires. The Arab builders fell into a love of bright colours, baked into shining tiles, and this, too, gave a character to *their* art. Any strong and general interest in building, felt by a people, will produce a living school of art. There is no one and perfect school, there is an infinitude of conceivable perfections.

ENGINEERS' ARCHITECTURE.

With all these variables, however, there has been one constant—the *building* interest; the delight in experimental structure, the adventure into the unknown.

I must fortify myself here with some historical data, in proof of what would otherwise be mere assertion. Notwithstanding the Greek theory of temple architecture, their architects, as a matter of fact, seem nearly always to have been engineers; and it is this engineering interest in architecture which I am about to trace. Their legendary craft-master was the mechanician Daedalus. Callicrates, the builder of the Parthenon, also built the great fortification called the Long Walls. Hippodamus, the celebrated architect, also of the age of Pericles, fortified the Piraeus, and was an expert in town planning. Archimedes himself was counted among their seven great architects.

The engineering element in Roman architecture is most marked, and it was this, indeed, which entirely burst the old bottles of tradition, and transformed the art into one of daring structural adventure. Most of the great Roman architects seem to have been engineers in the strict sense. Even Vitruvius, who was so much of a reactionary, was official keeper of war-engines, and he tells us that the art had three branches, building, dialling, and mechanics; meaning by the last the construction of military and other engines. Trajan's favourite architect followed the army and built his wonderful military bridge over the Danube. Architects in Rome were called

* "The Theory of Greek Architecture" [JOURNAL, 8th Feb. 1908].

" machinatores," also " structores," and " magistri." Architect was a more general term which included ordinary workmen.*

The identity between engineers and architects continued into the Byzantine period, and all the great architects of the time of Justinian seem to have been engineers. Anthemius, the architect of Sta. Sophia, is called the " mechanikos," and we are told that " he was an inventor of machines and reached the summit of mathematical knowledge." Indeed, he has left a book on the subject. Associated with him was, as Procopius says, " another mechanic called Isidorus." " They were the most suitable of all mankind for the purpose." Isidorus the Younger, who re-erected the dome after its fall, had been employed in building the fortified military outpost, Zenobia. The famous and beautiful Church of the Virgin at Jerusalem was built for Justinian by Theodorus, called architect and " machinarius." † The learned Benedictine, Leclercq, says that this name of mechanician, carrying the idea of constructor, is found in all epochs of the Lower Empire.

When we reach the Middle Ages we meet with evidence which shows the same state of things. Alnoth, the celebrated master of works of Henry II., was an engineer. In France, Eudes, the favourite master of Louis IX., went with him to Palestine and constructed the walls of Jaffa. The custom is well represented in the sketch-book of the architect Villard de Honnecourt, which treats of building, sculpture, geometry, and machines. Amongst his notes, which include an essay on Perpetual Motion, and many mechanical devices like power-saws, pile-drivers, crossbows, and war-engines, is one on the construction of a floor out of timber too short to bear across the space. This I note because we shall meet with it again.

The great mediæval buildings are, all the best writers unite in telling us, solutions of problems of how to throw stones high into the air, and balance them there. A great French castle or cathedral was not designed as beauty, it was developed along a line of experiment as surely as the great ocean liners have been so developed. We may almost regard it as an accident of traditional custom that the bishops and the people liked to have the fronts of their churches covered and their windows filled with didactic sculptures and stained glass. The essential construction, however, was conceived by any of the great masters as a problem of stress and poise, just as the designer of the Forth Bridge so conceived his problem.

THE RENAISSANCE.

The men of the Renaissance set themselves systematically to learn all that might be learnt. This is the mark of the new birth of learning. Its spirit is most completely manifested in that extraordinary man Leonardo da Vinci, and our own Bacon fully grasped and expounded the theory. But in building art a strange thing happened—as Morris puts it, " the past slew the present ; " " strange to say, to this living body of social and scientific New Birth was bound the corpse of a past art. On every other side it bade men look forward, on the side of art it bade them look back." It is evident that one of the subjects opened up for scholarly investigation was the mighty architecture of Rome. Under other circumstances it might have been possible that the principles—the science of construction—should have been studied, and not the mere fashion of the outward adorning, but it was not to be. One reason why this was so may be suggested : Italian patriotism seized on the ideal of reviving the past of Rome, and putting away the intermediate manner of building which had been brought in by the German conquerors.

The notebooks and studies of Leonardo, however, show that it was always phenomena and principles which interested *him*. Large sections of his manuscripts are devoted to abstract

* Cabrol's *Dict.*, s.v. Architect.

† Cler. Ganneau in *Q.S. of Pal. Expl. Fund*, 1898, p. 251. See also what Procopius says of Chryses of Alexandria : " A clever engineer who served Justinian as an architect."

exercises in planning, to considerations of dome-building and other structural possibilities, as well as to studies in engineering, machine-making, fortification, and canals. Amongst his schemes is one for a town, for Leonardo was a pioneer in town planning as well as in aviation.

This scheme comprises a system of low-level streets for commercial purposes, and an upper residential stratum. The roads slope to the higher level outside the walls, and within they are connected by bridges, while the lower region is reached by staircases and large areas opened to it for light. "Those," he says, "who would go through the whole place by the high-level streets can do so, and he who would go below can do so. The stairs must be circular because the corners of square ones are always foul." Another scheme is for combined streets and canals, by which cellars were made accessible to boats. "Let the width of the street," he says, "be equal to the average height of the houses." An important section deals with domes, being, as Richter says, "theoretical and ideal researches made in order to obtain a clear understanding of the laws which must govern the construction of a great central dome with smaller ones grouped around it. In these sketches [I am still quoting] Leonardo seems to have exhausted every imaginable combination to illustrate the consequences resulting from a given principle." Quite so; he was the first, that is, to enter on a systematic inquiry as to the mechanics of architecture.

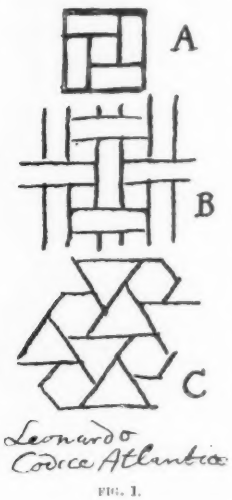


FIG. 1.

Among these studies into abstract architectural possibilities is an examination of the puzzle floor which I have already mentioned, it is caught up, investigated, and at once universalised into a principle—that of the Japanese lattice (see fig. 1).*

Another study which so far as I know has not been explained is the four-flight interwinding staircase (see fig. 2), which afterwards appears in Palladio, and which Inigo Jones thought the Venetian architect must have taken from Chambord, where it had been realised. Now, as Chambord was begun just at the time when Leonardo was living at Blois, and as the section of his studies which contains this remarkable exercise relates to the design for a palace for Francis I., one may, I think, conclude that this stair was Leonardo's invention. All these studies were probably for the complete treatise on architecture which he contemplated producing.† The spirit in which he followed investigation is expressed in an outburst so high-pitched that I am almost ashamed to read it: "O marvellous Necessity, thou with supreme wisdom constrainest all effects to be the direct result of their causes, and by irrevocable law every natural action obeys thee by the shortest possible process. O wonderful stupendous Necessity, the theme and artifice of Nature, the Eternal law." In another place he says: "There is no certainty where one may not apply any of the mathematical sciences."

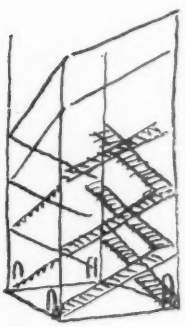


FIG. 2.

The only other artist of the Renaissance known to me who caught the idea of investigating principles—the scientific spirit—was Dürer, and he possibly had access to Da Vinci's notebooks. In his manuscripts in the British Museum are some studies for domes of a parabolic section, and some exercises in plan schemes. The dome of parabolic section was "in the air" long before Wren in turn seized on it.

* Still later the puzzle floor was published by Serlio, and an example of it was made a wonder of at our Royal Society (see "Parentalia").

† Richter.

WREN'S TEACHING.

For England and more modern times we fortunately have some records of the thoughts of Wren on the art he practised. Although Wren was not a world-genius like Leonardo da Vinci, he was in many respects an English Leonardo, and the one architect we have had whose formal thought matters. I say formal as opposed to the flashes of insight of a dozen men like Pugin. Wren's was a great intellect most highly trained in all the science and philosophy of an ample age. He had been marvellously precocious, and during a very long life tried to satisfy an infinite curiosity by patient investigation. More than even a great artist, Wren was a great man. It may be somewhat curious to note here how often admirable practical skill in the arts may be linked to great poverty of thought in theoretic exposition, so that the splendid achievement of a Palladio or a Chambers in active work may be accompanied by mere twaddle of explanation and rhetoric.

Some recent writers have rather lightly taken it for granted that there must be some mistake as to Wren's scientific attainments, but we have the consensus of opinion of his contemporaries and of modern mathematical and astronomical experts that he was a powerful original genius. He is said to have been the first to make a model of the moon's surface as seen through a telescope, and the first to draw minute objects through a microscope. He and his friend, Robert Hook, another scientific architect, were conversant with the general law of gravitation before Newton brought it to a proof. Newton, in a letter to Halley, speaks of a visit he paid to Sir Christopher, in which they "discussed the problem of determining the heavenly motions on philosophic principles [that is, by the law of gravity]. You are acquainted with Sir Christopher; pray know when and where he first learnt the decrease of the force in the duplicate ratio of the distance from the centre" [that is, the law of inverse squares]. Halley replied that "Sir Christopher told him that Mr. Hook had frequently told him that he had proved it, but that he never was satisfied that his demonstration was correct." That is, the problem of gravity had been discussed by Wren and Hook and its actual law stated before Newton proved it in a convincing way.*

This same Hook says of him, "Since the time of Archimedes there scarce ever met in one man in so great perfection, such a mechanical hand and so philosophical a mind"; and again, in his treatise on comets, he gives a method of determining their parallax "invented by that incomparable mathematician, Dr. Christopher Wren." These things are beyond my knowledge, but I know that they represent wonderful powers.

It was after one of Wren's professional lectures on astronomy that, in 1660, a committee was formed which instituted the Royal Society, then described as "a Philosophical Society for the Promotion of Physico-Mathematical Experiment." Wren was instructed to sum up its scheme, and in this he explained that it was to "make provision *for Natural experimental philosophy*."

Wren was almost certainly the first in England to apply the methods of scientific investigation to the laws of structure, and Hook is said to have been the first who stated the mechanical properties of the arch. In Wren's earliest report on St. Paul's he says that it might be affirmed of its vault, "Not by an architect taking his measures from the Ancients, but by a Geometrician—this part being liable to demonstration—that the roof was ever too heavy for its butment."

We are fortunate in possessing records, however slight, of Wren's systematic thought on architecture in some fragments which have been printed in "Parentalia," and by Miss Phillimore. The teaching of such a man on his chosen art should have great value and weight, but they have been strangely overlooked and have never, so far as I know, been commented on. It seems clear from these fragments that he contemplated writing a history of architecture and also a general philosophy of its first principles, both possibly to be combined in one work. The fragments

* *Dict. Nat. Biog.*, under "Newton."

belong to a time late in his long life, for Wren speaks of the vaults of St. Paul's as in being. The notes may have been written when, over eighty, he had retired from active work to pass his time in contemplation and studies. Miss Phillimore has printed what seems to be an introduction to the historical study of classical buildings published in "Parentalia." This introductory part was cut away possibly because it dealt with subjects like the Ark of Noah and the Temple of Solomon, but there are some interesting general remarks by way of introduction. The part given in "Parentalia" contains a first-rate critical examination of Pliny's accounts of the Temple of Diana at Ephesus, and of the Mausoleum, also a description of the "Temple of Mars Ultor" and the "Temple of Peace" in Rome. In the preliminary remarks which I shall quote it appears that his intention in the proposed work was to give "a larger idea of the whole art" of architecture, and he thus began :—

"Whatever a man's sentiments are upon mature deliberation, it will still be necessary for him in a conspicuous work to preserve his undertaking from censure, and *to accommodate his designs to the taste of the age he lives in, though it appears to him less rational.* I have found no little difficulty to bring persons otherwise of good genius to think anything in architecture would be better than what they have heard commended. Many Gothic forms of cathedrals are to be seen in our country and many had been seen abroad, which they liked the better for being not much different from ones in England. This humour with many is not yet eradicated and, therefore, I judge it not improper to endeavour to reform the generality to a better taste in architecture by giving *a larger idea of the whole art, beginning with the reasons and progress of it* from the most remote antiquity, touching chiefly on some things which have not been remarked by others. *The project of building is as natural to mankind as to the birds.*"

In the fragment printed in "Parentalia" we have an admirable statement of the utility of architecture in the State in a phrase which might be taken as a motto by town-planning associations : "*Architecture has its political use ; public buildings being the ornament of a country ; it establishes a Nation, draws people and commerce ; makes the people love their native country, which passion is the great original of all great actions in a Commonwealth.*"

Rather extravagant that may seem to us, but a practical proof follows out of history. "The emulation of the cities of Greece was the true cause of their greatness. The obstinate valour of the Jews, occasioned by the love of their Temple, was a cement that held together that people for many ages, through infinite changes. The care of public decency and convenience was a great cause of the establishment of the Low Countries and of many cities in the world. Modern Rome subsists still by the ruins and imitation of the old."

"Architecture aims at Eternity ; and therefore *is the only thing incapable of modes and fashions in its principles.*" "The Orders are not only Roman and Greek, but Phœnician, Hebrew and Assyrian, *being founded upon the experience of all ages,* promoted by the vast treasures of the great monarchs and skill of the greatest artists and geometricians, *everyone emulating each other.*" The Orders, that is, were admirable so far as they embodied much experiment and long experience. And then he proceeds, in more general language : "Beauty, firmness and convenience are the principles : the two first depend upon geometrical reasons of optics and statics ; the third only makes the variety." The geometrical, that is structural, principles are eternal, but a changing element is brought in by new needs and new ideas of convenience. "There are two causes of beauty—natural and customary. Natural is from geometry, consisting in uniformity, that is equality, and proportion. Customary beauty is begotten by the use, as familiarity breeds a love to things not in themselves lovely. Here lies the great occasion of errors, but *always the true test is natural or geometrical beauty.* Geometrical figures are naturally more beautiful than irregular ones : the square, the circle are most beautiful ; next the parallelogram and the oval. There are only two beautiful positions of straight lines,

perpendicular and horizontal ; *this is from Nature and consequently necessity*, no other than upright being firm." He then passes to the expression of some very interesting particular views based largely on his favourite Roman architecture ; but enough has been said to show that he accepted that only as embodying a vast stock of past experience, and he knew that the real basis of architecture was necessity, law, geometry. Further on he says so still more clearly in the opening of the second tract (or second chapter of a general treatise) which begins thus :—

" Modern authors who have treated of architecture seem generally to have little more in view, but to set down the proportions of columns, &c., as they are distinguished into Doric, Ionic, Corinthian and Composite, finding them in the ancient fabrics. *Though more arbitrarily used than they care to acknowledge*, they have reduced them to rules, though in their own nature *they are but the modes and fashions of those ages wherein they were used.* Although architecture contains many excellent parts besides the ranging of pillars, yet curiosity may lead us to consider whence this affectation arose originally, so as to judge nothing beautiful but what was adorned with columns, even where there was no real use for them. It will be to the purpose to examine whence proceeded this affectation of a mode which hath continued now at least 3,000 years, and the rather because it may *lead us to the grounds of architecture* and by what steps this humour of colonnades came into practice." He thinks the habit of mind first was rooted when men sacrificed in groves. Then he passes on to what was evidently to be the chief content of his work, the consideration of the true grounds of architecture in structural law, in these words : " It seems very unaccountable that the generality of our late architects dwell so much upon this ornamental, and so slightly pass over *the geometrical, which is the most essential part of architecture.* For instance, can an arch stand without butment sufficient ? If the butment be more than enough it is an idle expense of materials ; if too little it will fall ; and so for any vaulting, and yet no author hath given a true and universal rule for this nor hath considered all the various forms of arches." Wren then proceeds to investigate the laws of stability by consideration of the centres of gravity of the several parts, basing himself on " Archimedes and the modern geometricians who have treated of centres of gravity." * His first demonstration regarding the arch is so simple and illustrates his method so well that I give its essence in general words. If the model of *half an arch* with its abutment (a diagram of an arch in a square of wall is given) will stand of itself, then the two halves when brought together into a complete arch will stand. " So it appears," he says, " that the design where there are arches must be regulated by the art of statics and the duly *poising of all parts to equiponderate. Hence I conclude that all designs must in the first place be brought to this test or be rejected.* I have examined some celebrated works as the Pantheon and judge there is more butment than necessary. I suppose the architect provided against earthquakes. The different forms of vaulting (he goes on) are necessary to be considered, both as they were used by the ancients and the moderns [*i.e.* mediæval builders], whether Freemasons or Saracens." He then reviews different types of vaulting—Roman, Mediæval and Byzantine—and gives us the interesting information that he adopted the form of vaults used at St. Paul's from Sta. Sophia, " because it was the lightest manner and requires less butment ; I have therefore preferred it to any other way used by architects."

The theory of architecture here erected on wide foundations of knowledge, historical and experimental, is truly a general explanation, a philosophy of architecture, and we shall far rather be disciples of Wren by understanding his mind than by vainly copying the forms of things which he himself used more or less under protest (as in the case of the balustrade) in different relations, and, as he himself says, according to " the gust " of the age in which he lived. I may say here

* He would have delighted in the recently discovered and just published treatise on the Centre of Gravity by Archimedes.

that no adequate account of Wren himself and his accomplishment exists except the remarkable life contributed to the "Dictionary of National Biography" by the man of the last generation who was best qualified to understand him, and I wish this could be printed together with Wren's own teachings, on which I have here ventured to comment. It would, I think, make the best foundation book for all our proposed teaching, for it should stir ambition, clear thought, and do much to shake off the dull artistic inertia and contented utterance of theoretic platitude which too much besets us all.

Wren tells us that he designed the beautiful saucer domes of St. Paul's by borrowing them from Sta. Sophia because they were the most mechanically perfect that he could find. Some sketches for the great dome show that its section was conceived as conforming to a general parabolic curve rising from the plinths of the great piers and passing through the abutments and over the crown of the so-called cone. I say "so-called," because, with its rounded top, its section is a parabola (see fig. 3). Wren saw, and probably was the first of architects to do so, that "necessity," which he equates with "nature," must be one with beauty. We are told that he always preferred his earlier scheme for St. Paul's, and it is plain he must have done so, for that has unity; the whole was a domical structure, not a structure with a dome. Some residuum of the idea is found in the present plan, for the nave proper is made equal to the choir and a vestibule bay is added in front. There is under the strictest limitations of law wide room for choice, of course. For instance, Wren doubtless might have counterpoised his main vaults by another means than the high screen on the aisles; but the expedient is perfectly scientific, and probably he borrowed the idea from mediæval buildings, looking on it as a continuous pinnacle.

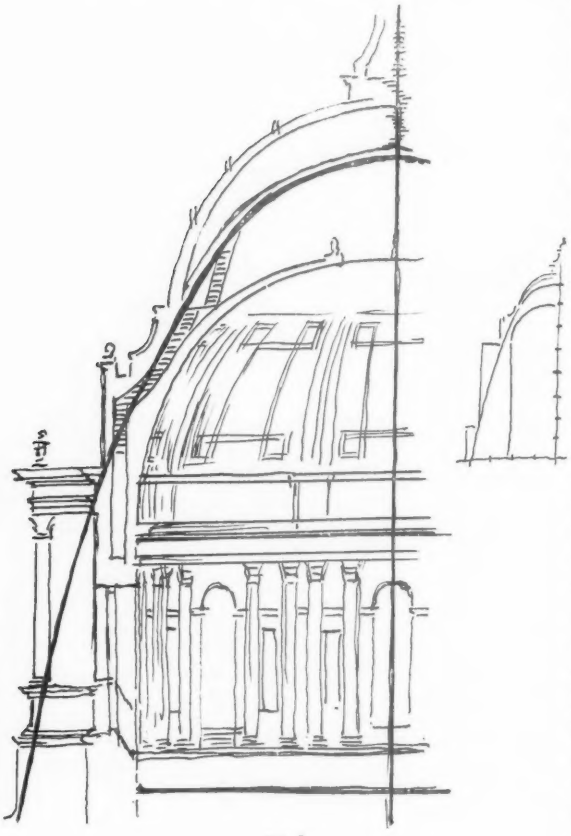


FIG. 3.

CONCLUSIONS.

I have tried to show in the foregoing extracts and comments that the living central stem of architecture has always been rooted in the spirit of active experiment and adventure for the further satisfaction of needs and desires. Two views as to the meaning and content of architecture have been held, and perhaps still are—at least some people seem to think they hold them. (1) That there is a *thing*, Architecture,—perhaps revealed in the one perfect form of classical art, or manifested more or less in different forms in divers times, as Greek and Gothic architecture.

Further, it is to be attained by a special sense in the artist. (2) That the essence of architecture is proportion, the discovery and use of definite ratios, and that by this method of proportioning an absolute architecture may be embodied. There is a third view which holds that architecture is primarily building according to the natural laws of structure and stability, according to need and order, and always with care and finish: that it must ever vary with ever-changing conditions, and that this ordinary building may have associated with it painted stories and sculptured stories, or inlays and fretted works and gildings, while the essential architecture is still structure, and the method of architectural growth is by continuous experiment in the possibilities of structure. I must safeguard myself from being thought to urge any quest of originality. Quite the reverse. I am satisfied that all search for it just blocks the way, with our preconceptions and limitations, to any possibility of realising a true originality, which properly is of the root, not of the appearance. True originality is to be found by those who, standing on the limits of the sphere of the known, reach out naturally to some apprehension and understanding of what is beyond; it is the next step in an orderly development.

What I *do* urge, in the simplest and plainest words, is concentration on practical, experimental, and scientific education. What we most need at the present time is the accumulation of power; we want high mechanical training, wide practical experience, and great geometry. And then we want to cover the field by a systematic research into possibilities. The possibilities of walls and vaults, and of relation between the walls and the cell, and between one cell and another, want investigating, as Lord Kelvin investigated the geometry of crystalline structures and the "packing of cells." In my view, it is true, such a training would not include the whole of architecture, but it would, I believe, open the way to the best we can attain. We might hope thus to give up hugging the coasts of the known, to sail boldly forth under the stars. Thus, and thus only for us, may we enter again upon the architecture of adventure.

In a late number of the JOURNAL there is an able paper by my friend Mr. Ball,* which touches on the imaginative and poetic side of architecture, and, in the main, seems true enough, but it hardly sufficiently, to my mind, recognises the actual facts of to-day. For instance, it says: "There is a phrase, 'reason in building,' which is the favourite catchword of the moment with a certain class of persons fond of oracular utterances." It then proceeds to say that it is "imaginative reason" which is wanted. Why, yes, of course. When we can get it I should like it very much; and I do find it in the Forth Bridge; I saw it last spring in a concrete railway viaduct, and in the autumn in the smart tidiness of the city of Munich, in the ironwork of the little wayside stations high up in the Chamounix Valley; in the new barracks at Strasbourg, and a new railway water-tower at Metz. I saw it the other day in a photograph of the last great sailing-ship built, a five-master, I think, and bearing a vast area of swelling canvas. Some brick-kilns have the beauty of Byzantine churches, and the most romantic modern buildings I know are the oast-houses of Kent. All these are, indeed, works of imaginative reason, and one may look at them with startled interest. In the same number with the objection to mere reason a quotation is made from a speech by Mr. James Bryce,† who at least is an expert on European history. He remarks that the historian of architecture when he comes to the nineteenth century is at a loss, and goes on to ask, "Now, is not the time about due when you must be beginning to do something desperate?"

Building has been, and may be, an art, imaginative, poetic, even mystic and magic. When poetry and magic are in the people and in the age they will appear in their arts, and I want them, but there is not the least good in saying, "Let us build magic buildings. Let us be poetic." Yet let me say again, it is because I want these things that I face this problem.

* "The Teaching of Architecture" [JOURNAL, 5th Feb. 1910].

† JOURNAL, 5th Feb. 1910, pp. 302–303.

If for the moment I may be a "self-constituted" educational adviser to this Institute, and express such a personal view, I, too, would say, "It is about time to do something desperate." We should devote the whole of the next session to papers on constructive science, get Professor Karl Pearson to give us the result of his researches on the arch, Professor Perry to draw up a report on the application of mathematical inquiry to structures, and our Fellow, Mr. Dunn, should lecture us on modern constructive problems. As talking of reason in design is to be tabooed as a self-evident truism, someone who is prepared to commit suicide should examine the prevalence of *irrationality* in modern buildings. The scientific side of our examinations should be rapidly screwed up, and the archæological side as rapidly unscrewed. All our travelling studentships should be made to bear on the same quarter. Pugin students should be made to analyse varieties of mediæval vaults, and Soane students varieties of staircase arrangement. Tites should be sent to study French railway stations, Grissells to work at German hotels, and Godwins to American hospitals.

I am anxious to repeat that I have not proposed to speak of the whole of architecture: the sublime sculptures of the Parthenon, the glittering mosaics of the vaults of St. Mark's, the solemn splendour of the glass of Chartres, and all the fear, mystery, rapture, delight and play which have been wrought into them; their energy, their pride, and their loveliness; and all their wreathings, frettings, platings and inlays. Although I have not spoken of these, again I say it is because I want just such as these—but different—that I have spoken at all. I want pathetic beauty in the barn and in the cottage, the most exquisite order, freshness, and efficiency in our town streets, the uttermost of costly majesty in the city's public palace, and still something beyond for our cathedrals, some expression of infinite aspiration. It is because I want all these, if it may be, or even less if it will be, that I have set myself to consider how they might be attained, and it is my own conclusions on the matter that I have now put before you. We need first the natural, the obvious, and, if it will not offend, the reasonable, so that to these, which might seem to be under our own control, may be added we know not how or what of gifts and graces. Thus may we hope to combine the two realities, the reality of natural necessity and common experience with the reality of the philosophers, which is the ideal, and to reconcile again Art with Science.

DISCUSSION OF PROFESSOR LETHABY'S PAPER.

Mr. Ernest George, A.R.A., *President*, in the Chair.

The PRESIDENT: I feel that there is profound wisdom in the argument that Professor Lethaby has put before us, and that we shall all take his teaching to heart. We seem to have got into the habit of using forms that are familiar things to us, and we do not sufficiently regard their constructive reason, their first cause. It would be good, I think, if we could eliminate from our minds a good deal that we know, and that is ready to hand.

Professor BERESFORD PITE [*F.*]: I beg sincerely to move a vote of thanks to my old friend Professor Lethaby for the Paper which we have heard to-night. It appeals to us all, as everything that he says does; but it is very difficult to listen to him and forget his past. Personally I cannot hear him without being wicked enough—I know he protests most vigorously against such a proceeding—to reflect on those exceedingly stimulating designs of his, and to seek to apply the doctrine to the daily work, simply because (I apologise to him most humbly for doing it) I think he would be sorry if we did not seek to apply these doctrines to our daily work; though I am quite prepared to admit with him that our business to-night is not to consider what one or other of us is doing or has been doing in the past, but to set our house in order in view of the admitted urgency of education—and, of course, some object in education and doctrine whereon to work. I know it does not carry us very far if we protest, as some of us have been protesting with some earnestness for some years, against the habit of loading the architectural student with the forms of bygone styles, then setting him examination papers on them and inducing him to imagine

that this is a necessary or a useful part of his architectural qualification. I hope the Paper to-night will help us a step further along the road of seeking definitely to separate antiquarianism from modern practical architectural education. Having said that, of course it is necessary immediately to say that a practical study of archæology—archæology as a living science, not an archæology that stores a museum with specimens, but an archæology which seeks to understand the thought, life, and method which lie at the back of every expression of thought, either in marble or in building in any way—a vivid realisation of the life and methods of the great nations of the past—is essential and vital to architecture. This is very different from merely coaching in the forms and being examined as to their reproduction. I must confess I am not altogether convinced by the theory, or convinced by the statement of the theory (perhaps it is due to imperfect appreciation of it) which Professor Lethaby has put before us. It seems to me to be a little dangerous to argue from genius. We might as well argue from Dædalus as from Leonardo da Vinci, because he was not only a town-planner who planned the Labyrinth, but was an aviator as Leonardo was himself. When we pass from Leonardo to Wren he turns our eyes away from those things which really fascinate us in Wren, those gifts which are altogether so wonderful, his extraordinary fluidity of treatment, if I may so speak, of the Classic Orders, the life and liberty and beauty that he breathed into the classic style, and the extraordinary originality which is, of course, a pure display of fancy and delight, so to speak, the dancing humour of his pencil and of his mind displayed in his steeples in St. Martin's, Ludgate, and in a hundred-and-one varieties of form. I know that Wren is, behind, a great mathematician, pre-eminently a man of science—fundamentally that. So was Mr. Penrose. Speaking with all reverence, Mr. Penrose had not the faculties of architectural composition, he had not the fancy and imagination and the play with which Wren delights us all. I suggest, Sir, there is another side; there is a parallel line; there is a line of scientific progression, that is of architectural adventure which is a perfectly continuous one, and a proper one, and one that is leading us onward; but it is not a mono-rail; there is a parallel stream of—I do not exactly know how to describe it—I dare not use the word imagination—there is a second stream of artistic sympathy always parallel with the scientific, if you will, always united with it, always coupled with it, not necessarily always equal in strength, perhaps, or equal in assertiveness, but there. So that you will find Leonardo, who was a mechanician, would paint "The Last Supper." You will find in Brunelleschi another fundamental example of a man of science, who, I venture to suggest, spent little more than scientific thought upon the conception of the vault of the Cathedral at Florence, and the design of the machinery for its construction, with the innumerable mechanical devices that were necessary. But he spent probably his best thought and his best labour, or what was parallel with that. At the same time the man was building San Lorenzo and the Pazzi Chapel. The architect's fancy and delight and humour and imagination were playing at the same time with works that I venture to suggest it would be pedantic to assume were based on any high scientific aspirations, or were really the product of scientific thought at all. It becomes a little difficult to argue from these outstanding geniuses, though one admits that one after another they all reach a certain finality in the fact that we are unable to follow them any further. If the architectural student is to be trained upon Lord Kelvin in the future, I think I shall have to throw up architecture and take to sketching. But there are a good many vastly interesting suggestions in Professor Lethaby's Paper. If we set to work on such a platform of building reasonableness, as he suggests to us, of believing (and I heartily do believe) that the factor of inter-columniation in the Greek Temple, for instance, was the depth of the lintel, the capacity of the marble to bear from point to point, which fixed the spaces between the columns, there is a constructive faculty there which becomes to us essential to our view of Greek architecture. Now, if we are to be Greeks we shall put a pillar at each corner of the portico and one beam across. Obviously, if there is nothing else to guide us but our perception of constructive adventure and achievement, all our relation to the humour and the interest and the life of past architecture vanishes apart from its essential constructive achievements. So that if it is inter-columniation, the ferro-concrete beam at once dismisses all the charm, all the sweetness (and we shall regret it enormously) of the Greek method. We can do it if we wish. We can ascend the columns and live upon the top in a world of reverie, or in a world of delight, and bless the engineers for anything and everything that they may give us. Engineering brings us to a very practical exposition of almost everything that Professor Lethaby has said. It is only to us, as architects, living in this work-a-day world of ours, that his doctrine is necessarily somewhat ethereal. When we come to engineering we see the doctrine brought down to solid earth. For years engineering works have impressed me—I venture humbly to express a personal experience—more than any other class of modern building. The whole circumstance of a railway tunnel, cutting, bridge, or viaduct, and of the interlacing of lines and levels that you get in the approach to a big city, is enormously impressive to the eye and to the mind, and vastly suggestive of wisdom and force and skill and purpose and the energy that is characteristic of our age. I have no doubt that in the future the very rivets of the

engineer will have all the sanction of the triglyph and the dentil of the Greek. It must be so. Their guttæ have no more special charm than the rivets on the underside of a compound beam. So that we shall gaze at the Forth Bridge and the other achievements of engineering with wonder. But the world as it is constituted will not stop there. The engineers will not let it stop there. Is it our business to let it stop there? Where shall we be if we let it stop there? Can it stop there? I do not know that it can. As far as we are concerned all the static facts for the everyday practice of architecture are arrived at and achieved. The knowledge required of brickwork, to deal with all the ordinary problems of architectural practice, is extremely limited and easily acquired. It is obviously the same with regard to steelwork, and many of the other scientific sides of the theory of building. When we have got as far as we need, where are we to go next? In domestic architecture, in civil architecture, in ecclesiastical architecture we have come to the end of our tether tolerably soon, and buildings will be singularly devoid of interest if we stay there. The only thing we can do in those circumstances is to lay by a hope, a hope for that future view of things, that distant view of things when what is practicable to us to-day is crystallised into something which is beautiful to, shall I say, the tenth generation to come—to try to cast our minds forward and realise an interest in that which is present, which we fail to take in that which is past. How far this is possible I cannot say. I feel that there is something in it. There is more than something in it. It is probably along such lines that we shall find—*we* shall not find it, but it will be found—the appreciation of our own work lies. But meanwhile we are children of the Renaissance; we have to do what Alberti did, as Leonardo did—we have to take up those forms which evoke sympathy and pleasure in those around us, and employ them for the purpose of harmonising the expression with the age in which we live. We can move in advance of the age in which we live; we can get right out of touch with it; but it seems that, ever since the Renaissance put the hands of the clock back, Science has adventured into the future and despised the past, and Art has adventured into the past and despised the future. And it is for the architect somehow or other to combine those two things, the view that goes back into the past and rejoices in the re-creation and the re-echoing of that which was always an expression of the delight of the builder in his work, with the ceaseless and necessary onward progression which is culminating in our own age, and of which Professor Lethaby's paper to-night is a very significant indication.

Mr. H. HEATHCOTE STATHAM [*F.*]: I beg to second the Vote of Thanks for the Paper, which is not only interesting but which I think may be rather a landmark in regard to our modern thought of architecture. I will refer, in the first instance, to one or two details. In regard to what Professor Lethaby said about the Greek idea of proportion, I agree with him that that was with the Greeks a system of definite measurement; but whether it really produces all they aimed at is another question, and, if you push it too far, you come to that point to which Pennethorne got—that, owing to the effects of perspective, you only see the proportions really right from one point of view, and he regarded the Parthenon as a building to be viewed from one point of view only. I say that is a *reductio ad absurdum*. There are some interesting remarks about Wren. I should like to know, if Wren had such strong ideas as to the futility of the columns which were put there because people liked them, why he kept putting pilasters where they were not wanted, and I should like to know why he put that second story to the nave of St. Paul's. I am quite aware that there is a theory now—I have heard it before to-night—that that second story was for constructional reasons. I can imagine that in the transepts he may have felt it was wanted as an abutment to the dome; but as for carrying it all along the nave, I maintain that was done simply as formal architecture, and that those small domes have not such a thrust as to require that. I do not think you can call a cone, although it has a dome at the top, a parabola. A parabola is a curve which, if produced to infinity, is always tending to get nearer to a straight line, but never becomes straight. You cannot call two straight lines joined by the segment of a circle a parabola. Coming to the real gist of the Paper, I was very much struck with this sentence—that any strong and general interest in building felt by a people will produce a living school of art. I think that is completely true, and that is what we have to long for now, that there should be a strong interest in architecture. And then Professor Lethaby follows upon that by speaking of the one *constant* which there is—the building interest. I quite agree with him if he would go a step further. I ask, is there no other form of adventure besides adventure in construction? If it is true that at the Renaissance people looked back to the past instead of considering the present, should not we be very sorry to lose all that Renaissance work—the Riccardi and Pitti and Farnese palaces and so on, and even St. Peter's with all its faults? Then when you speak of Leonardo's studies for the construction of domes, I note one page of Leonardo's dome sketches, which has been published in one of Baron de Geymüller's works—which is obviously a set of sketches for architectural effect and different ways of combining domes; so that Leonardo certainly looked at it from that point of view as well. There is a true parallel between engineering and castles. I always say the mediæval castles which we now think picturesque were purely military engineering;

that the Roman aqueducts which we now think so picturesque were purely civil engineering; and, in fact, the real parallel is between Roman aqueducts and the Forth Bridge; but I cannot admit the parallel between engineering and cathedrals. Of course their style grew out of the struggle with construction; but was there no other reason than a structural one for the three arches in front of Peterborough Cathedral, or for the spire of Salisbury? Were not they built for beauty and enjoyment? I propose to put it that architecture is the poetry of plan and section. You have to have a plan and section of the construction of the building; architecture, I say, is the treatment of plan and section so as to produce a poetic effect on the mind, and that, even without painting and sculpture. Take away all the mosaic out of Santa Sophia at Constantinople, and it will still be a great building. How does Walter Pater put it in the article "Winkelmann on Greek Art"? "Architecture, which begins in a practical need, can only express by vague hint or symbol the spirit or mind of the artist. He closes his sadness over him, or wanders in the perplexed intricacies of things, or projects his purpose from him clean cut and sincere, or bares himself to the sunlight; but these spiritualities, felt rather than seen, can but lurk about architectural form as volatile effect, to be gathered from it by reflection." So that we are to bring something of our own to it. There is the same thought in Tennyson's "Palace of Art":—

> "Full of long-sounding corridors it was,
> That over-vaulted grateful gloom,
> Thro' which the livelong day my soul did pass,
> Well-pleased, from room to room."

If we could have a great palace like that, independent of cost, with endless corridors and rooms arranged for climax and variety, surely that would be a great poem even without the addition of mosaic and sculpture. I should like to mention one little testimony which came to myself as to the effect of architecture. A good many years ago I was staying with my old friend the late Dean of Salisbury, in exceptionally bright and beautiful July weather. I was in the Cloisters with a lady, also staying there, who knew nothing about architecture, but was very much interested in painting and sculpture. We stood there for some minutes looking up at that pyramidal pile of building, and at the spire which, in the bright sunlight, looked almost like frosted silver going up into the blue sky, and my companion suddenly said: "I believe architecture is the greatest of all the arts, after all." She knew nothing about construction; that was the effect of the pure beauty of architecture. Nevertheless, I think Professor Lethaby's idea of paying more attention to what he calls adventure in structure is very full of help and suggestion for us, provided, I say, that it is recognised as the groundwork of adventure in design. I think the one grows out of the other. But with that reservation there is a great deal in his Paper with which I am most strongly in sympathy; it is a most remarkable and thoughtful address which we shall all do well to take to heart, and consider all the thoughts to which it naturally gives rise.

MR. PAUL WATERHOUSE [*F.*]: I will endeavour to speak, Mr. President, as you have asked me, but I feel this is a night upon which we are on a high level, and that I shall hardly come up to the standard. I have enjoyed the Paper very deeply, and I join very heartily in the vote of thanks. One feels that the author is one of the men who know, who really appreciate what architecture is, and further appreciate that there is more in it than we can understand. He is one of those who approach architecture with their hats off, reverently. There are not many men who do that. Most of us, no doubt, look upon it as a matter of daily business and forget the upper aspects, the divine aspects, the things which we can hardly look into at all. We have had a wonderful insight to-night into some of those higher aspects, and we have all been helped to think on the subject. Professor Lethaby will not mind my saying that with many of his sentences I have been in total and healthy disagreement. I rather feel that both he and Professor Pite have taken a pessimist's view, which they need not have taken. I also feel with regard to one thing that Professor Pite said that I must be allowed a word of protest. He put the protest in himself for fear we should any of us think he was unduly running down the study of the past, but I cannot help feeling that we are as much in danger now as ever of ignoring the value of that study. I cannot bear to hear a word said which would induce any young man to think that one jot or tittle of his study of ancient architecture can be for one moment remitted. Professor Lethaby has given the most beautiful definition of the position which he conceives architecture takes. I think he reaches the climax of his Paper, where he points out that "true originality is to be found by those who, standing on the limits of the sphere of the known, reach out naturally to some apprehension and understanding of what is beyond." I cannot conceive a more adequate or poetical or truthful description of the higher architect's position. But the man who is standing on the limits of the sphere of the known must be sure that it is known, that he has a reasonable share of knowledge in that past. I do not know what Morris could have meant when he spoke of the Renaissance, saying that on every side the Renaissance bade men look forward, except in art, in which it bade them look back. I think there is a mistake about that. As I understand it, the art of the Renaissance is only part of the great movement in literature and culture which you might call looking back, if you like to use that expression. But it was not looking back

in the sense of archæology; it was an enormous revelation to mankind that there is no pleasure so exhilarating or stimulating as that of finding oneself in complete spiritual sympathy with an epoch of the past. That is not looking back; it is simply taking blood and vitality out of the past ages and preparing oneself for a forward movement. If I have said one or two words of criticism it is only because I feel a deep interest in what has been said, and I realise that in matters of this kind if a man differs he does not necessarily cease to sympathise greatly with what has been said on the other side. It is only another view of the same thing, and our art is so big a matter that we can afford to look upon several sides of it at once. With regard to the remarkable quotation from Miss Phillimore containing Wren's statement that a man must conform to the taste of the age in which he lives, I believe in one version of that which I have read elsewhere the word *geist* is used —the "*geist* of the age." I notice that Professor Lethaby has quoted it as "gust" and as "taste." Is it possible there is a doubtful reading on that subject? It is rather interesting to me to know what the word used by Wren actually was.

PROFESSOR LETHABY: I took it for "gust." I did not know that there was any possibility of doubt. I may have made a misreading, but I have no doubt it is "gust" in the sense of "taste."

MR. STATHAM: I think so because that was a word very commonly used then. They did not talk about the German *geist* in Wren's days.

PROFESSOR LETHABY, having acknowledged the vote of thanks, said: I agree with almost everything that has been said in the discussion. I do not know that one ought to be careful to try to reply to everything that is said from other aspects and other standpoints. Of course, I myself have written this evening from a special area that I marked down, and I hoped that I was careful to limit myself by saying that I did not think—again and again I tried to say it—it exhausted the whole of the possibilities of architecture. Perhaps there were two main things that I thought of. The first is that the method of design to a modern mind, I think, can only be understood in the scientific (in the sense of Lord Kelvin, that somebody has spoken of with horror), or in the engineer's sense of a definite analysis of possibilities—not as a vague poetic dealing with poetic matter, with derivative ideas of what looked domestic, or looked farmlike, or looked ecclesiastical—the dealing with a multitude of flavours—that is what architecture has been doing in the last hundred years. It has been trying to deal with a set of flavours—things that looked like things but that were not the things themselves. Old farmhouses and cottages are things themselves—cottages and farmhouses. Now we, the best of us, are trying to build things which shall *look like* farmhouses and look like cottages, and so on. It suggests to me a story that I am reminded of by seeing my friend Mr. Horsley in the room, which he told me twenty-five years ago. Passing down a back street in London he saw a card in a window, "Fine jam, good strawberry flavour, 4*d.* a lb." It is not the strawberry flavour we want, it is good sound food, I take it. I venture to say that the living stem, the only possible stem of building-design, which of course is alive now and has been alive all through the times immediately past—that stem can only be that of the analysis of possibilities—the scientific method. That was my first point, and my second point I have entirely forgotten, as I thought I should.

MR. R. WEIR SCHULTZ writes:—

I have ventured to put together a few of the thoughts which occurred to me during the course of Professor Lethaby's paper, and of the subsequent comments on it, and I now offer them in place of the rather incoherent remarks which I made in response to the unexpected call of your President to take part in the discussion.

A humble disciple of the Master whose learned and absorbingly interesting address we had been listening to, I felt completely in agreement both with his point of view, and with the course of action which he outlined as a serious possibility for the immediate future. The historical *résumé* interested me, especially with regard to the fresh light thrown on the important part played by mechanics and engineering in the thoughts and works of the Old Masters.

The reference to fortification and military engineering reminded me of an interesting piece of fact which I came across some time ago when looking up the history of a well-known family of Scottish master masons, the Mylnes, who for at least twelve generations in direct descent practised the craft of masonry, and not only schemed but carried out many notable historical buildings in Scotland. It was, I think, John Mylne, sixth of the line, who, while in active practice of his craft as master mason about the middle of the seventeenth century, was appointed *Engineer of Fortifications and Principal Master Gunner for All Scotland.*

These Mylnes eventually drifted south, as Scotsmen seem to have a habit of doing, and Robert Mylne, eleventh of the line, practised in London as architect and *engineer* during the latter part of the eighteenth and the beginning of the nineteenth century. This Robert was trained as a mason under his father in Edinburgh, and was the first of his family to definitely adopt the designation "Architect" as distinct from mason. He was the engineer of the first Blackfriars Bridge, of the Gloucester ship canal, both examples of the "adventure" of the times. He was also engineer to the New River Company, and as such laid out their Islington property—a notable essay in town planning. He filled the posts of surveyor to

St. Paul's Cathedral, Greenwich Hospital, Canterbury Cathedral, and the Stationers' Company of London, and was a Fellow of the Royal Society.

The brothers Adam were *engineers* also, as well as both *builders* and architects, and the old North Bridge of Edinburgh, a very fine piece of engineering, which spanned the deep valley between the Old and New Towns, and which was demolished only a few years ago, was, if I remember right, both schemed and erected by them.

It is surely an utter fallacy to say that both the artistic and the mechanical or mathematical instinct are seldom found to be keenly developed in the same person. There are many such amongst our younger architects, and, to take an instance amongst the seniors, I can well remember Mr. Norman Shaw's keen interest in all matters pertaining to mechanical construction, and I can still call to mind a wonderful fully-worked-out detail of the iron or steel construction of the roof of the New Water Colour Room at the Royal Academy, which he brought down to the office one morning all carefully worked out by himself, and drawn with his own hand. And what Mr. Shaw does not know about the mechanism of clocks and watches is not worth knowing, as those of us are aware who have had the privilege of seeing his collection, and of hearing him talk on this, one of his most favourite subjects.

Burges was another of the same order. Wasn't he the first Modern to investigate the methods of the old lead workers; and isn't his wonderful measured drawing of the Amiens flèche a model for all time of how an architectural study of a constructive masterpiece ought to be undertaken?

It seems a pity that Professor Pite should persist in ignoring the fact that good construction and good design go hand in hand, are part of one and the same thing, and that he should continue to argue that if construction is once again given its due prominence in architectural training the result will be the apotheosis of the commonplace. Surely all history is against him. Is not construction the basis of all fine mediæval architecture? Was not the whole scheme of say a great cathedral a constructive one in its essence—and what finer and more romantic architecture will you find anywhere? Is not Gothic architecture an embodiment of the romance of construction?

We hear a good deal about the high quality of modern domestic architecture in this country, but after all what does it amount to?—little more, I think, than a parody of the simple traditional types of cottages, yeomen's houses and small manor houses which are still to be found dotted about the country, and most of which were erected by the local builders with the materials at their hand in the customary manner of their time, without the aid of office-trained architects.

One has also heard a good deal lately about the "English tradition" in the architecture of modern public buildings, but what is this but a revival of the type of Palladian architecture introduced into this country from Italy in the seventeenth century, a revival without discrimination and very indifferent in quality?

One speaker remarked on the use by Wren of pillars and pilasters on his buildings, but has not the lecturer shown that Wren rather apologised for working in the fashion of the time; and, after all, does not the real interest of Wren's work lie in his mastery of the science of construction, and his application of it to his buildings.

Nowadays we have new materials and new constructive methods to deal with. Let us adventure a little way forward with them, discard the old worn-out, dead forms, and evolve fresh ones from the problems they evoke. Recently in London one had watched, amongst other things, the growth of the two new Post Office buildings—the one in Newgate Street, and the other at the foot of Wimpole Street—both being constructed with ferro-concrete. One had almost ventured to hope that something interesting and appropriate in the shape of fresh thought would have shown itself on their façades—something evolved out of the lines of the construction within. But, no! Outside, we now see the same dull, dead applied pilasters and arches and cornices, having little relation to what is inside.

There is, I fear, not much hope for us of the present generation, but there may be a little if we will only take to heart seriously what the lecturer has told us in all seriousness, and act on his advice—advice the outcome of clear reasoned thought, the matured thought of one who has pondered on the subject for many years—and if it be too late for us to benefit, ourselves, let us see to it that the generation now growing up is started off on better lines, and there may then be some hope for the future of architecture in this land of ours, even if we do not live to see its realisation.

MR. J. L. BALL, Director of the School of Architecture, Birmingham, to whom a copy of Professor Lethaby's Paper had been sent, writes:—

I should like to offer a brief comment on Mr. Lethaby's lecture, not indeed by way of *criticism*, which would be beyond my power and my inclination. A contribution to thought of so weighty and elevated a character can but be received with respectful admiration, even by those who have the misfortune to differ on some points from its author.

I see no cause to withdraw or to modify the distinction which I made between the practical and the imaginative reason. The distinction exists, and has an important bearing on the subject of discussion. Mr. Lethaby thinks that it does not recognise the actual facts of to-day. But how so? How can the circumstances of any special period affect a purely metaphysical distinction? The powers of the human mind are probably just the same to-day as they always have been throughout

recorded time. All that we can say is that circumstances have caused some of these powers to be unduly exercised, while others have fallen into disuse. An effort of the will would be enough to restore the balance. Mr. Lethaby admits that he himself has remarked evidences of what I call the imaginative reason in certain works at Munich, Strassburg, and Metz. Is this distinction then valid only in Germany, the modern home of philosophy?

I am convinced that part of the difficulty which some of us experience in Mr. Lethaby's theory of art is due to verbal misunderstandings. For example, much of what he calls engineering we would prefer to call architecture and building. In our day the architect of a bridge is popularly termed an engineer, while in the fourteenth century the architect of a bridge was known probably as a master mason. Now the essential quality of a bridge is stability: therefore by whatever name its contriver is known a bridge is a work of building and architecture. But the car which runs over it, and the ship which sails beneath, are works of engineering. Their essential quality is mobility. Engineering is in fact the making of engines, of machines, and the one indispensable quality of machines is that they shall *move*. The difference between the work of the engineer and the work of the architect is precisely the difference between mobility and stability. Mr. F. Lanchester once said to me: "The difference between my work and my brother's is that mine must move and his must not move." It would be difficult to distinguish more concisely.

TOWN PLANNING.

PAPERS COLLECTED BY THE R.I.B.A. TOWN PLANNING COMMITTEE.

XVI. COMPARISON OF STATUTORY PROVISIONS RELATING TO STREETS IN LONDON AND LIVERPOOL.

By W. E. Riley [*F.*], Superintending Architect of Metropolitan Buildings and Architect to the London County Council.

I have pleasure in acceding to the request of the Town Planning Committee to prepare a statement comparing the provisions relating to streets contained in the London Building Act 1894 with those in a more recent statute. The Liverpool Corporation (Streets and Buildings) Act 1908 has been taken as being a good example of wider powers for dealing with the formation of streets and the development of estates, and in the following statement an endeavour has been made to place side by side provisions which have any analogy in the two statutes.

London Building Act 1894, Part II.

Section 7.—Before any person commences to form or lay out any street whether intended to be used for carriage traffic or for foot traffic only such person shall make an application in writing to the Council for their sanction to the formation or laying out of such street either for carriage traffic or for foot traffic (as the case may be):

Every such application shall be accompanied by plans and sections with such particulars in relation thereto as may be required by printed regulations issued by the Council and the Council shall forthwith communicate every such application to the local authority:

And no person shall commence to form or lay out any street for carriage traffic or for foot traffic without having obtained the sanction of the Council.

Section 10.—(1) Before any person commences—

(*a*) To adapt for carriage traffic any street or way not previously so adapted or to use or permit to be used for carriage traffic any street or way not previously so adapted;

(*b*) To adapt as a street for foot traffic only or as a public footway any way not previously so adapted;

such person shall make an application in writing to the

Liverpool Corporation, &c., Act 1908.

Section 4.—(1) No person shall commence or proceed with the formation of a new street or the widening of an existing street or the widening or adaptation of any road footpath or way so as to form a new street otherwise than in accordance with plans and sections previously approved by the Corporation.

Section 4.—(2) Such plans sections and particulars to be furnished as may be reasonably required by regulations issued by the Corporation.

LONDON BUILDING ACT 1894, PART II.

Council for their sanction thereto and such application shall be accompanied by plans and sections and such particulars in relation thereto as may be required by printed regulations issued by the Council and the Council shall forthwith communicate every such application to the local authority and no person shall commence to execute any such work without having obtained the sanction of the Council.

Section 12.—In any case where it is intended—

(*a*) To form or lay out any street not being within two miles of Saint Paul's Cathedral for carriage traffic;

(*b*) To adapt or permit to be used for carriage traffic any street or way (not being within two miles of Saint Paul's Cathedral) not previously so adapted;

and the Council shall deem it expedient in the public interest that the street or way should by reason of its length or importance or in consequence of its forming or being so situate as to be likely to form part of an important line of communication or for other sufficient reason be of a greater width than forty feet clear they may make it a condition of their sanction that the street or way shall be throughout or in such part as they may direct of a greater width than forty feet but nothing in this section shall authorise the Council to require a greater width than sixty feet:

And before requiring that any street or way shall be wider than forty feet the Council shall give notice of their intention to the local authority in order that the local authority if they think fit may make a representation to the Council.

Section 15.—In any case where—

(1) The Council under this Part of this Act make it a condition of their sanction to—

(*a*) the formation or laying out of any street for carriage traffic over land which either at the commencement of this Act or at any time within seven years previously has or shall have been occupied by buildings or by market gardens; or

(*b*) the adaptation or use for carriage traffic of any street or way not previously so adapted or used

that the street or way shall be throughout or in any part of a greater width than forty feet; or

(2) The Council determine that the prescribed distance from the centre of the roadway shall be greater than twenty feet;

the Council shall be liable to pay to the owner of land or buildings required for such greater width or such greater prescribed distance compensation for the loss or injury (if any) sustained by him by such requirement. The amount of such compensation if not agreed within two months from the time of such condition being made or determination arrived at may (unless the Council waive the condition or determination) be recovered in a summary manner except where the amount of compensation claimed exceeds fifty pounds in which case the amount thereof shall be settled by arbitration according to the provisions contained in the Lands

LIVERPOOL CORPORATION, &c., ACT 1908.

Section 4 (4).—If the Corporation determine that main thoroughfares or continuations of main thoroughfares or means of communication between main thoroughfares in the city or main approaches or continuations of main approaches or means of communication between main approaches to the city (hereinafter in this section called main communications) will be necessary upon such estate or lands such main communications as so determined shall be shown on the plans to be furnished to the Corporation under the last preceding sub-section (relating to general scheme for the development of estates) and the land required for the formation thereof shall be defined by posts and rails or otherwise as the Corporation may allow and dedicated to the public before the formation or widening of any such street or adaptation of any road footpath or way so as to form such street is commenced or proceeded with.

Section 6 (1).—Whenever application shall be made to the Corporation to approve the formation of a new street on any estate or lands it shall be lawful for the Corporation to require that the new street shall be formed of such width as the Corporation shall require.

Provided that in the event of the Corporation requiring any new street to be of any greater width than the following (hereinafter in this Act called "the prescribed width") viz.,

(*a*) In the case of a new street which in the opinion of the Corporation will form a main thoroughfare or a continuation of a main thoroughfare or means of communication between main thoroughfares in the city or a continuation of a main approach or means of communication between main approaches to the city 80 feet; or

(*b*) In the case of any other new street the width required for such street by any Act or by-law for the time being in force within the city;

the Corporation shall purchase from the owner of such estate or lands and such owner shall sell to the Corporation any additional land necessary to make such new street of such greater width as aforesaid and shall also make compensation to such owner for any loss or damage sustained by him by reason of the Corporation requiring the street to be of such greater width aforesaid.

Section 6 (4) provides that in default of agreement the amount of compensation and of any purchase money shall be determined by arbitration under the Arbitration Act 1889.

LONDON BUILDING ACT 1894, PART II.

Clauses Acts which are applicable where questions of disputed compensation are authorised or required to be settled by arbitration and for that purpose those Acts so far as applicable shall be deemed to be incorporated with this Act:

Provided always that within two months from the time of such condition or determination being made or arrived at if the amount of such compensation has not been settled before the expiration of such time it shall be lawful for the Council to waive such condition or determination Provided also that if the Council waive such condition or determination they shall pay to the owner the reasonable costs charges and expenses incurred by him in consequence of such condition or determination and in connexion with the negotiations for the settlement of the amount of compensation.

Section 19.—Whenever any applicant under Part II. of this Act for the sanction of the Council to the formation or laying out of a street or the adaptation of a street or way for carriage or foot traffic or for the certificate of a district surveyor is dissatisfied with the refusal or conditional grant of such sanction or with any condition imposed by the Council or with the refusal of such certificate as aforesaid he may appeal to the tribunal of appeal.

Grounds of refusal to sanction plans of streets.

Section 9.—In any of the cases following but in no other case (that is to say):—

(1) Where any street is proposed to be formed or laid out for carriage traffic without being of or being widened to the full width of forty feet clear or such other width as may be required under the provisions of this Act;

(2) Where any street is proposed to be formed or laid out for foot traffic only without being of or being widened to the full width of twenty feet clear;

(3) Where any street exceeding sixty feet in length or any street not exceeding sixty feet in length of which the length is greater than the width is proposed to be formed or laid out without being open at both ends from the ground upwards;

(4) Where any street not being within the City is proposed to be formed or laid out in such manner that such street will not at and from the time of forming and laying out the same afford direct communication between two streets such two streets being (where it is intended to form or lay out such street for carriage traffic) streets formed and laid out for carriage traffic;

(5) Where it is proposed to form or lay out any street not being within the City for foot traffic only and it appears to the Council that such street should not be formed or laid out for foot traffic only or that such street should be formed or laid out for foot traffic only subject to conditions;

(6) Where the street is proposed to be formed or laid out for carriage traffic with any gradient steeper than one in twenty;

(7) Where it is proposed to form or lay out any street in such manner as to be in contravention of any byelaw of the Council;

LIVERPOOL CORPORATION, &c., ACT 1908.

Section 28.—Any person deeming himself aggrieved by any order determination or requirement or the withholding of any consent or approval under this Act of or by the Corporation or by any condition attached to any such consent or approval may within 14 days appeal to a petty sessional court.

Section 29.—Any person deeming himself aggrieved by any conviction or order made by a petty sessional court may appeal to quarter sessions.

No grounds for refusal required.

London Building Act 1894, Part II.	Liverpool Corporation, &c., Act 1908.
it shall be lawful for the Council by order at any time within the period of two months after the receipt of the application to refuse to sanction or to sanction subject to such conditions as they may by such order prescribe the formation or laying out of such street for carriage traffic or for foot traffic only as the case may be provided that the Council shall within such period give notice to the applicant of such order stating fully all their reasons for such refusal or the imposition of such conditions as the case may be: Provided that if within the said period of two months the Council fail to give notice of their refusal to sanction the formation or laying out of such street or of their disapproval of any such plan or section they shall be deemed to have given their sanction thereto.	
No such power in London Building Act.	Section 12 (1).—No new street shall be laid out in the City exceeding 150 yards in length without at least one intersecting street in every 150 yards thereof, and not more than thirty houses shall be erected on either side of any such new street between any two consecutive intersecting streets. Provided that this section shall not prevent any land adjoining or abutting on any street for a length exceeding 150 but not exceeding 400 yards being used for the site of any one building or works with the outbuildings yard and approaches belonging thereto so long as there is a street at each end of the length of land so used.
Ditto.	Section 4 (3).—Whenever application is made for approval to the formation of a new street the owner may be required to furnish plans and particulars showing the general scheme for the development or laying out of the estate or land.
Ditto.	Section 6 (5).—Any additional expense in the execution of works, caused by a new street being required of a greater width than specified by the by-laws (36 feet), shall be borne by the Corporation.
Ditto.	Section 9.—Any person intending to form a new street shall mark on the plan submitted the proposed line of frontage or any house to be erected.
Ditto.	Section 10 (1).—When in the opinion of the Corporation any street is narrow or inconvenient or without any sufficiently regular line of frontage, or that it is desirable that the line of frontage shall be altered, then the Corporation may fix a line of frontage.
Ditto.	Section 14.—Should the owner and Corporation agree, that land not less than one-tenth of the estate or one acre in extent, whichever shall be the greater, shall be set apart as a garden or open space, or as a public recreation ground, the Corporation may in some circumstances relax the by-laws as to making up of streets, or the Corporation may, if they think fit, make up such street.
Ditto.	Section 17.—The Corporation may lay out with grass margins or as gardens any part of any street so long as the total width available for traffic is not reduced below 36 feet.
Ditto.	By-laws 3, 5, 6, 7.—Every new street intended for a carriage road shall be not less than 36 feet—but a *back street* not exceeding in length 33 feet may be of a minimum width of 9 feet and must be constructed for use as a carriage road—such *back street* may be a cul-de-sac if of a minimum width of 16 feet. *Back street* means a street intended solely as a secondary means of access to any building for the purpose of removing the contents of any privy ashpit &c.

9 Conduit Street, London, W., 23rd April 1910.

CHRONICLE.

The Institute Parliamentary Bill.

By Order of the Council a circular in the following terms was issued from the Institute last Saturday to all members residing in the United Kingdom :—

The new By-laws having just received the approval of the Privy Council, it is thought desirable by the Council of the Royal Institute to take this opportunity of stating the progress already made with regard to the new Bill. The Special Parliamentary Bill Committee has reached the final stages of its work, and the Institute Solicitors are now drafting the Bill. After it has been considered by the Council it will be laid before the General Body for their approval. Its objects, as defined by the Resolution of the General Meeting of 4th March 1907, are as follows :—

(1) To declare that it is in the public interest to enable the public to distinguish architects recognised as qualified by a competent authority from those not so recognised.

(2) To extend the present chartered privileges of the R.I.B.A., making it the statutory authority for the education and examination of architects for admission to the Institute.

(3) To legalise a scale of charges.

The Council desire to point out that it is now prepared to receive applications from those architects desirous of becoming Licentiates, and that, as the period for their admission expires within twelve months from 23rd March, it is essential that the earliest opportunity should be taken to secure the advantages offered.

Up to this point the response to the invitation to apply for the Licentiateship has been most gratifying. The numerous applications that are being received daily show that the action of the Royal Institute in this matter has been found acceptable by the general body of architects throughout the country.

Ernest George, *President.*
Henry T. Hare, *Hon. Secretary.*
Ian MacAlister, *Secretary.*

Town Planning Act 1909: The Institute Committee's Recommendations to Allied Societies.

The subjoined Recommendations regarding the operation of the Town Planning Act 1909 have been drawn up by the Institute Town Planning Committee, and issued to the Allied Societies for the consideration of their Town Planning Committees :—

RECOMMENDATIONS FOR THE CONSIDERATION OF THE TOWN PLANNING COMMITTEES OF THE ALLIED SOCIETIES.

In view of the fact that local authorities feel the necessity of keeping the cost of preparing town plans as low as possible, at all events in the immediate future, it would be desirable to assist such authorities in every practicable way by means of voluntary effort.

The following suggestions are made with a view to economy in obtaining valuable preliminary information and the soundest available advice on the subject :—

1. The scale of 25-inch Ordnance should be adopted for general purposes, a larger scale being only adopted in cases of special intricacy or for small areas.

2. It is important that contour models should be prepared except where the area is practically level throughout.

It is suggested that this work might be undertaken by architectural and engineering students of universities and technical schools as part of their training, and thus be provided free of cost.

3. It would be desirable to interest voluntary effort in the various centres, so that the factors in the problem should receive thorough study by those most competent to deal with them.

4. The Allied Societies should consider how far it would be possible for local sociological, archæological, and architectural societies, the Chamber of Commerce, the Board of Education, the University, the Railway Companies, and other bodies, to appoint committees and form a joint Council to prepare preliminary studies, which, it is hoped, would focus all the best intellects of the town on the subject and thus assist in educating public opinion.

It is suggested that the first duty of such a Council should be to study the past and present conditions of the town. For this purpose the following maps, &c., would be useful :—

(*a*) A collection of old maps to show as completely as possible the past development of the town.

(*b*) A series of Ordnance Survey maps coloured to show the present conditions of the town with regard to such matters as :

(1) Degrees of density of population.
(2) Insanitary areas or areas of special poverty.
(3) Distribution of manufacturing and business areas.

(4) Parks and other open spaces.
(5) Any vacant spaces available or specially suitable for extending existing open spaces or for being acquired as new open spaces.
(6) All public buildings and other places of public interest and all buildings having special beauty within the area to be dealt with.
(7) The maps should be marked to show tramways, railways, water-ways, &c.
(8) And to show the limits of possible drainage and water supply, if any.
(9) All spots of natural beauty should be marked.

(*c*) Geological maps.
(*d*) Maps of other towns similarly situated for purposes of comparison and suggestion.

5. In addition to such maps, any available information and statistics should be collected concerning:

(*a*) General traffic conditions and tendencies.
(*b*) Particulars of existing proposed and desirable railway, water, highway, and tramway facilities.
(*c*) Particulars of local industries and any special requirements for their encouragement and extension.
(*d*) Particulars of the tendencies of the town's growth, with indications afforded as to the natural lines of development.
(*e*) Particulars of places of special beauty or interest, historical or legendary.
(*f*) Particulars as to the use made of existing parks and open spaces and as to the needs of different localities in this respect.
(*g*) Estimates of the probable future requirements of schools and other public buildings for which sites might be arranged on the town-extension plans.
(*h*) Particulars of local customs and requirements affecting the desirable sizes and shapes of building plots for various purposes and hence determining the distribution and distance apart of new streets.
(*j*) Suggestions as to the character and treatment of new streets.
(*k*) Particulars of local conditions as to building materials and any other local characteristics which go to make up the individuality of the town or which specially need consideration with a view to preserving this as far as possible in the enlarged town.
(*l*) Particulars of modifications in the existing by-laws which it is desirable to have embodied in town-planning schemes.
(*m*) Rateable value per acre.
(*n*) Survey showing ages of property in periods of twenty years.
(*o*) Ownership of land in a wide area around town.

The collection and consideration of this information, while it will secure a thorough understanding of the problem, will bring out numerous suggestions of things which it is desirable to secure shall be embodied in the new town plan, and a careful record of such suggestions would be most valuable for those instructed to prepare the plan.

It is probably not desirable at first to prepare actual plans for the town extension, but a report embodying the information gained and the suggestions which after consideration are thought to be good ones, would be of value to the town and to those charged with the duty of preparing the plan, and, if the architectural profession shows itself to have a thorough grasp of the problem, it is more likely to secure due influence in the actual town planning when, at a later stage, this comes to be worked out on paper.

While bearing in mind the distinction between the powers given by the Housing and Town Planning Act and the means by which towns secure improvements in areas already built over, it is most desirable that in preparing a comprehensive general scheme urgent improvements of the latter class should be included, as the co-ordination of the existing town to its future extensions forms a part of the whole problem and must not be ignored. Indeed the future of many suburban areas depends entirely on the character of the facilities which are afforded it in regard to communications with the heart and other parts of the city.

NOTES ON POSSIBLE WORK FOR ALLIED SOCIETIES.

Seeing that the Act authorises a local authority to adopt town-planning schemes prepared by individual owners or groups of owners of land, there is little doubt that much of the town-planning work will be carried out in this way and that this should afford many opportunities for the Allied Societies or local committees of architects to give advice and suggestions, and they might well consider the circumstances of the ownership of land around their town with a view to seeing how far the work could conveniently be done by the owners of land and what suggestions could be offered to such owners. Such plans can only be adopted by local authorities after being approved in the usual form, and under the Act architects are specially mentioned among those who will have the right to be heard as persons affected by a town-planning scheme, so that they will have an opportunity both of making suggestions and of criticising schemes prepared for the development of land by local landowners as well as those which may be prepared by the local town-planning authority. The co-operation between architects who are in touch with different owners of land might quite well lead to the co-operation of the owners themselves in the preparation of schemes under this part of the Act. It is obviously a great advantage that the whole of the town-planning work in a district need not be done by the local authority, but that private owners, developing their own estates in general accord with the

scheme for the whole town, will have an opportunity of introducing variety of treatment. Local committees of architects should endeavour to secure more appreciation of the architectural side of the problem by enlisting the co-operation of owners of undeveloped land.

Prizes and Studentships 1911.

The pamphlet giving particulars of the Institute Prizes and Studentships for the year 1911 will shortly be in the hands of members and on sale at the Institute as usual. The subjects set for competition are as follows :—

THE ESSAY MEDAL AND TWENTY-FIVE GUINEAS, open to British subjects under the age of forty.—*Subject :* "The Design and Construction of Belfry Stages and Spires in Stone or Brick."

THE MEASURED DRAWINGS MEDAL AND TEN GUINEAS, open to British subjects under the age of thirty.—Awarded for the best set of measured drawings of any important building—Classical or Mediæval—in the United Kingdom or Abroad.

THE SOANE MEDALLION AND ONE HUNDRED POUNDS, open to British subjects under the age of thirty.—*Subject :* An Entrance Gateway to a Capital City.

THE OWEN JONES STUDENTSHIP : CERTIFICATE AND ONE HUNDRED POUNDS, open to members of the architectural profession under the age of thirty-five.—Founded to encourage the study of Architecture more particularly in respect to Ornament and Coloured Decoration. Competitors must submit testimonials, with drawings exhibiting their acquaintance with colour decoration and with the leading subjects treated of in Owen Jones's *Grammar of Ornament.*

THE GODWIN BURSARY : SILVER MEDAL AND SIXTY-FIVE POUNDS, open to members of the architectural profession without limitation of age.—Founded to promote the study of works of Modern Architecture abroad, and awarded for the best selection of practical working drawings, or other evidence of special practical knowledge, and testimonials.

THE HENRY SAXON SNELL PRIZE : A SUM OF SIXTY POUNDS, open to any member of the architectural profession (who may associate with him any member of the medical profession).—Founded to encourage the study of the Improved Design and Construction of Hospitals, Convalescent Homes, and Asylums for Aged and Infirm Poor. *Subject :* A Convalescent Home.

THE PUGIN STUDENTSHIP : SILVER MEDAL AND FORTY POUNDS, open to members of the architectural profession (of all countries) between the ages of eighteen and twenty-five.—Founded to promote the study of the Mediæval Architecture of Great Britain and Ireland, and awarded for the best selection of drawings and testimonials.

THE ARTHUR CATES PRIZE : A SUM OF FORTY GUINEAS, open to British subjects who have passed the R.I.B.A. Final Examination at one sitting during 1909 and 1910.—Awarded for the best set of testimonies of study submitted for the Final Examination, and for studies of Classical or Renaissance, and of Mediæval Architecture.

THE TITE PRIZE : CERTIFICATE AND THIRTY POUNDS, open to members of the architectural profession under the age of thirty.—*Subject :* A Design, according to the Methods of Palladio, Vignola, Wren, or Chambers, for a Campo Santo.

THE GRISSELL GOLD MEDAL AND TEN GUINEAS, open to British subjects who have not been in practice more than ten years.—Founded to encourage the study of Construction. *Subject :* Design for a Skating Rink of Wood Construction.

THE ASHPITEL PRIZE : BOOKS VALUE TEN POUNDS.—Awarded to the student who distinguishes himself the most highly of all the candidates in the Institute Final Examinations 1910.

St. Paul's Bridge.

The Times of the 14th inst. published the following letter addressed to its Editor and signed by the President, Mr. Ernest George, A.R.A., Sir L. Alma Tadema, O.M., R.A. [*H.F.*], Sir Aston Webb, C.B., R.A. [*F.*], Sir George Frampton, R.A. [*H.A.*]. Messrs. John Belcher, R.A. [*F.*], Reginald Blomfield, A.R.A. [*F.*], Thomas Brock, R.A. [*H.A.*], John S. Sargent, R.A., and Hamo Thornycroft, R.A. :—

May we draw attention to the fact that a scheme for throwing a bridge across the river below St. Paul's Pier is now under the consideration of the Corporation of the City of London? This scheme when carried out will leave an indelible mark on the scenery of the river, and, according as it is handled, may be a magnificent approach to St. Paul's Cathedral or a monumental fiasco.

It is an unfortunate fact that the recent treatment of London bridges does not inspire confidence in the future of this project. Excellent pieces of engineering as they often are, they are, from the point of view of civil architecture, deplorable. Our object in writing is to urge as strongly as possible that, before any design is definitely decided upon, ample opportunity should be allowed for the expression of competent opinion and criticism of the design proposed. The Lord Mayor has announced that the cost will not fall upon the rates. With full acknowledgment of the City's generosity, we submit that that is not the point. The point of real moment is whether or not the most is going to be made of a great opportunity. We look upon London as a national heritage, and its beauty as a national asset to be jealously guarded and maintained.

Science and Architecture.

Mr. Maclaurin, the new President of the Massachusetts Institute of Technology, addressing recently the Boston Society of Architects, referred to the high degree of technical knowledge an architect of to-day must possess. "When the Massachusetts Institute opened," he said, "it served mainly as a protest against the neglect of science. Its far-seeing founder recognised that natural

science and its methods were changing everything, and that it behoved men to prepare for the coming of a new era. Science is the most effective influence in modifying the conditions of modern life. Certainly it has profoundly changed the profession of the architect. He has always needed to have some knowledge of science, but in these latter days an altogether new load is placed upon his shoulders. He has to design buildings for new purposes; he has to employ new materials; he has to work under new conditions; and the thousand-and-one new problems can scarcely be solved without much knowledge of the various branches of science. It will not do, at least in any great work, for him to rely wholly on help from other experts. A great work of art must be a unity; it cannot be made piecemeal. An architect must be an artist, however; he must have the artistic sense, and he must breathe the artistic spirit. And, after all, there is no real antithesis between science and art. The fact is being very slowly learned, but the leading men of science are becoming conscious that science after all is a great work of art. Architecture is the one branch of art that makes its appeal to everybody. Men and women may go through life hearing little of music, seeing scarcely anything of painting or of sculpture, and reading no literature at all; but they cannot well escape the influence of architecture. That influence is none the less potent because the appeal that architecture makes is silent and the response rarely articulate."

Town Planning in Greater London.

The National Housing and Town Planning Council are organising a Conference to be held at Caxton Hall, Westminster, on the 6th May next, to consider the question of Town Planning in Greater London. Invitations to attend are being sent to the London County Council and Local Authorities; also to representatives of Societies interested and to leading architects, surveyors, etc. The following Resolutions will be submitted:—

Resolution I.—This Conference desires to draw the attention of all Local Authorities in the area of Greater London possessing statutory powers under the Town Planning Sections of the Housing and Town Planning Act to the great importance of these new powers as a means of securing the wise development of the areas under their control.

Further this Conference strongly urges each Local Authority to appoint a Town Planning Committee to consider these new powers and duties.

Resolution II.—In view of the great need for securing harmonious action between all the Town Planning Authorities in the area of Greater London this Conference is of opinion that when sufficient time has elapsed to enable these Local Authorities to appoint Town Planning Committees and to consider the Reports of these Committees, the President of the Local Government Board should be asked to convene a Conference of these Local Authorities to consider joint action in regard to those features of Town Planning which affect the development and amenities of Greater London as a whole.

Other Resolutions will be placed upon the Agenda if these are sent not later than Friday morning, 29th April, to the Secretary of the National Housing and Town Planning Council, 4 Tavistock Square, W.C.

Architectural Copyright.

A case recently reported shows the manner in which the Courts of Belgium sustain the right of the architect to the copyright of his design. The plaintiff, M. Acker, an architect, had designed an apartment house, 381 Avenue Louise, at Brussels, and M. Abbeloos, the defendant, had copied the façade in two other houses, 238 and 240 Avenue Albert. The Court condemned the defendant to pay the plaintiff 2,000 francs damages and the costs of the action, and ordered the judgment to be printed in three newspapers, and reserved to the plaintiff all rights as to signatures on the façades counterfeited by the defendant.

The "Art Journal" for April.

The *Art Journal* this month has matter of special interest to members. Mr. Ernest George's work in the realm of art furnishes a theme for an article by Mr. Rudolf Dircks devoted more especially to the President's masterly handling of water-colour. Of the sources of his inspiration the writer says: "As other artists have chosen mountain, woodland, or stream for their subjects, Mr. George has chosen the habitations of man, chiefly of later mediæval times. What others have seen in nature, its composition, colour, and atmosphere, he has found in bits of odd thoroughfares, in the form and texture of a building or a bridge, in ancient gable, tourelle, or dormer, in the decorated surface of a façade." Mr. George's drawings come out remarkably well in the process employed for their reproduction in the *Art Journal*, and the sixteen examples given as illustrations convey a very good idea of his powers. "Auxerre," printed on plate-paper in ink of a brownish tint, makes an effective frontispiece. The same number has an article on "Decorative Woodwork," in which are presented some interesting interiors in woodwork designed by Mr. W. H. Brierley [*F.*], Mr. G. L. Sutcliffe [*A.*], and others.

A Poster Competition.

Messrs A. & F. Pears, the soap-makers, are offering a first prize of twenty guineas and a second of five guineas for the two best designs in colour for a double royal poster exploiting the residential and other attractions of the town of Richmond, Surrey. Competing designs marked with cipher

or motto for identification must be sent to the Secretary of the Richmond Town Advancement Association, 1 The Little Green, Richmond, Surrey, not later than the 21st May next. All designs sent in will be exhibited in the Town Hall during the coming summer.

Obituary.

Sir William Quiller Orchardson, R.A., who died on the 13th inst., had been for nearly thirty years an Honorary Associate of the Institute. Born in Edinburgh in 1835, of Highland descent, he studied at the Trustees' Academy in Edinburgh under Robert Scott Lauder, came to London in 1863, and a year or two afterwards won a £100 prize at the French Gallery for his picture "The Challenge." He was made an Associate of the Royal Academy in 1868, and was promoted to full rank as Academician in 1877. His most popular works have been "The Queen of the Swords" (1877); "A Social Eddy" (1879), the first of that series of modern society dramas which included the famous "Mariage de Convenance"; "Hard Hit" (1879), reported to have fetched some £4,000 at Christie's two years ago; "Napoleon on Board the Bellerophon" (1880), now at Millbank, and "Napoleon dictating his Memoirs." "Voltaire," exhibited in 1883, was bought by Mr. Schwabe for the gallery that he afterwards presented to the city of Hamburg. Sir William Orchardson was an equally successful portraitist, and the Institute possesses a particularly fine example in the portrait which hangs in the meeting-room of the late Mr. Alfred Waterhouse, R.A., painted in 1892.

William Owen, of Warrington, who died on the 5th inst., was elected Associate in 1872, Fellow in 1889, and was transferred to the list of Retired Fellows in 1908. He was the architect of many buildings in and about Warrington, and designed the model village of Port Sunlight for Lever Brothers Limited. His son, Mr. Segar Owen, is a Fellow of the Institute.

The death through an accident of Mr. Lionel Gordon Detmar [*A.*] at the age of thirty has cut short a career of no little promise. Articled to his uncle, Mr. W. Hilton Nash, he passed the three examinations of the Institute and became an Associate in 1901. He studied at the Architectural Association and at the Royal Academy, and carried off the former's Travelling Studentship in 1902. Having completed his articles, he worked for a year under Mr. John Belcher, R.A., and subsequently with Mr. Leonard Stokes and Mr. James S. Gibson. He afterwards became associated in partnership with Mr. Theodore Gregg, of 1A St. Helen's Place. He designed the French Applied Arts Palace at Shepherd's Bush, carried out work for the London City and Midland Bank, and had just completed the large skating-rink in Maida Vale. Some country houses erected from his designs display marked talent.

Walter Edward Mills, of Banbury and Oxford, whose death occurred on the 17th April, was elected an Associate of the Institute in 1882. He was the architect of the church-house and the enlargement of the Union, Banbury; schools at Woodfordhalse, Northants; the rectory and the restoration of the parish church, Moretonhampstead, with new roof, reseating, &c.; and premises in Banbury and the neighbourhood. A few months ago Mr. Mills was appointed architect for the erection, at a cost of some £12,000, of additions to the Union Society's buildings, Oxford University.

ALLIED SOCIETIES.

Liverpool Architectural Society.—At a recent meeting of the Society the following resolution was passed on the motion of the President (Mr. T. E. Eccles [*F.*]): "The Liverpool Architectural Society desire to express their appreciation of the help that Mr. W. H. Lever has again given to the art of architecture by his recent and noble gifts to the University of Liverpool, in providing the School of Architecture with a home in the old Blue Coat Hospital, thus preserving a most interesting building to the city, and founding the Chair of Civic Design."—The *Building News* of last week has an article by Professor C. H. Reilly [*F.*] giving a description of the University's newly acquired building, together with a plan and a view of the exterior.

Royal Institute of the Architects of Ireland.—The question of a memorial to the late Sir Thomas Drew was under consideration at a special meeting of the Council last Monday, and it has been resolved to erect a memorial brass in Christ Church Cathedral. The cost will be defrayed by subscriptions among members of the Institute.

MINUTES. XII.

At the Twelfth General Meeting (Ordinary) of the Session 1909-10, held Monday, 18th April 1910, at 8 p.m.—Present, Mr. Ernest George, A.R.A., *President*, in the Chair; 33 Fellows (including 12 members of the Council), 37 Associates (including 2 members of the Council), and several visitors—the Minutes of the Meeting held Monday, 4th April, having already been published [p. 468] were taken as read and signed as correct.

The decease having been announced of Sir William Quiller Orchardson, R.A., *Hon. Associate*, a vote of sympathy and condolence was passed to his relatives.

The decease was also announced of William Owen, *Retired Fellow*; and of Lionel Gordon Detmar, *Associate*.

The following Associates attending for the first time since their election were formally admitted by the President—viz. Arthur Francis Bryan and George Marrison Stone.

A Paper by Professor W. R. Lethaby [*F.*], entitled The Architecture of Adventure, having been read by the author and discussed, a vote of thanks was passed to him by acclamation.

The proceedings closed and the Meeting separated at 9.55 p.m.

Parliamentary Bill Committee.

At the special request of his colleagues Mr. Edwin T. Hall has withdrawn his resignation from this Committee.

JAMES BROOKS [*Royal Gold Medallist*]: A MEMOIR.

By J. Standen Adkins.

ST. MICHAEL'S, COPPENHALL, SHOWING THE NEW CHANCEL AND TRANSEPTS BUILT ON TO THE OLD NAVE AND TOWER.

THE village of Hatford is situated in Berkshire, about three miles from the banks of the Thames, which, here known as the Isis, divides the county from Oxfordshire, and a like distance from the quaint old town of Faringdon. In the ancient church is the monument of Sir Robert de Hatford, the original lord of the manor, from whose family it passed to Alice, daughter of the poet Chaucer, or, according to another account, to one Thomas Chaucer, a person of some standing in the county in the first half of the fifteenth century, generally assumed to be a son of Geoffrey, though apparently without sufficient evidence. Subsequently the manor passed by marriage to the De la Poles, then reverted to the Crown, and was next vested in the Pusey family of the adjoining village of Pusey. Pusey House passed by marriage to the Bouveries, who, however, assumed the name of Pusey, and here in 1800 was born Edward Bouverie Pusey, who was destined to become in the future an intimate friend of, and to exercise a considerable influence over, a youth who was born at Hatford a quarter of a century later.

John Brooks, farmer, married a daughter of Avery Tyrrell, of Sutton Wick, near Abingdon (brother of the Rev. James Tyrrell, vicar of the adjoining parish of Drayton), and resided at Hatford in a house still standing, but now converted into stores, where their son James was born on the 30th day of March 1825.

That the boy as he grew up would be initiated into the mysteries of farming and become his father's right hand, and eventually his successor, appeared most certain, for Hatford was not a go-ahead village, and the inhabitants were, as a rule, content with their lot, living the lives and dwelling in the homes of their forefathers from generation to generation, with little to vary the monotonous routine; even the number of the inhabitants fluctuated but little at that time and stood at something over a hundred from the first years of the nineteenth century to nearly the end, but has now fallen to less than a hundred. Brought up in such an environment, it appeared most unlikely that the name of James Brooks would ever be known far from the place of his birth, or that it would become distinguished in any science except that of agriculture or in any art but that of rearing cattle; but it was the unexpected which came to pass, for his was a mind which could not be content with the dull monotony of work on the farm, and at an early age he showed a disposition towards mechanical science, which made it appear likely that he would eventually devote himself to

some branch of engineering. One of his early exploits was the dissection of his first watch, not an unusual performance for a youth possessed of an enquiring mind, but there was this difference from the usual sequel to such investigations, that the watch was successfully reconstructed on this occasion, and was again and again taken to pieces, cleaned, and kept in order by its young owner whenever necessary.

After receiving his education at Abingdon Grammar School he began to assist his father, who had removed to the Manor, Wantage, about a mile from the town. Here at the foot of the Berkshire Downs he led a retired country life, and was distinguished by his cross-country riding, the excellence of his shooting, and his great personal strength and activity; nor was the activity bodily only, for while engaged in farming his mind turned to the improvement of the mechanical appliances of the work, and he effected useful improvements in the plough and thrashing machine.

However, in spite of the interest and relaxation provided by such exercise of inventive power, the agricultural life did not satisfy the aspirations of the young man, and friendships which he formed at this period with the Vicar of Hatford and with Dean Butler (at that time Vicar of Wantage) gave his ideas a fresh direction, and so stimulated his ambition that soon after attaining his majority he departed for London, determined to seek his fortune in new environment and in a new vocation.

It is not certain whether when James Brooks came to the metropolis in 1847 he had actually chosen his future profession. On the one hand it appears that he had already developed advanced ideas on matters ecclesiastical, and this, coupled with the advice of his clerical friends and his own intense religious feeling, no doubt gave him a bias towards church architecture, but on the other hand his former achievements had all been mechanical and he had never received any instruction in drawing. However, whether as the result of want of opportunity for entering an engineer's office or of deliberate choice, he became a pupil of Lewis Stride, F.R.I.B.A., and from this time devoted himself earnestly to the study and practice of the profession in which he was destined to achieve such marked distinction.

Now followed a period of hard work and hard study, for the embryo architect had not only to acquire a knowledge of office routine and practice, but also much that in the ordinary course would have been picked up before the commencement of pupilage. This was especially the case with the art which is so necessary as the medium for expressing the designer's ideas, for although no doubt he had used his pencil to convey his intentions in connection with the mechanical inventions which he had produced, he had not attained any facility in sketching, and his early attempts were decidedly timid and unpromising. Work in Mr. Stride's office appears to have been exacting, and afforded little leisure for study or relaxation, and time for study had to be gained by early rising and sitting up late, and even such opportunities appear to have been frequently encroached on by work for other architects.

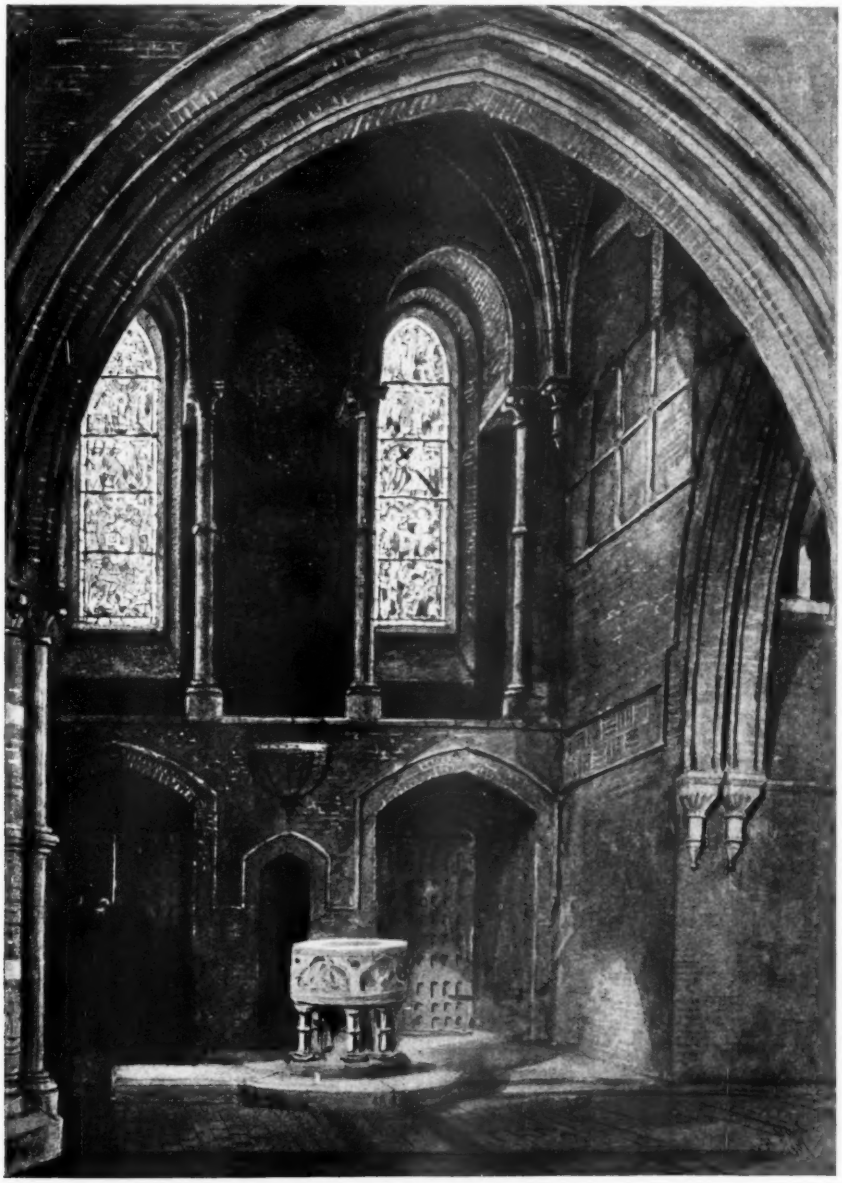
However, in the year following his arrival in London James Brooks commenced attending Professor Donaldson's lectures at University College, and took down copious notes, which were sometimes carefully re-written afterwards in a very minute and neat hand, such as would scarcely have been expected from a youth of such sturdy build and vigorous habits; and it may here be remarked that some of his earliest architectural designs were in close correspondence with this handwriting, painfully neat, drawn to a minute scale, and with a commonplace respectability in marked contrast to the masculine vigour and boldness of treatment which were afterwards typical of his best work.

On the 26th April 1849 he was admitted to the Antique School of the Royal Academy, and shortly after appears to have taken charge of the work of the office of Frank Cross, still continuing to work with Lewis Stride and to attend Professor Donaldson's lectures. After nearly two more years of "grind" new responsibilities were added, and the first step to success taken by the advent of the "first job" carried out on his own account. This was the rebuilding of a shop front in the High Street of Stoke Newington. The contract, amounting to £58, was signed on 22nd January 1851, and the work was finished by the end of May at a total cost (some extra work having been added) of £79 1*s.* 5*d.* The next commission was a house of moderate size at East Hendred, Berks, in the Italian villa style of the period, built of brick with Bath stone dressings. Shortly after an office was established at No. 6 Bloomsbury Square (soon afterwards renumbered as 5), a house distinguished as a former residence of Isaac Disraeli, but perhaps more interesting in the present connection as the residence and office from 1842 to 1851 of Brooks's distinguished contemporary Ewan Christian.

During the remainder of the decade commissions came somewhat sparsely, and consisted mainly of small houses in the young architect's native county, so that there must have been much unoccupied time so far as his own practice was concerned, which afforded opportunity for study, and for enlarged experience gained by occasional assistance to other members of his profession. Nor were his thoughts devoted to matters architectural only, for this period witnessed his marriage to Emma, daughter of J. Martin, of Sandford House, Oxford; and the birth of his eldest son and future partner, James Martin Brooks, 17th April 1859. At this time he resided at Acre Lane, Brixton, which had not then lost its rural character.

It was not till the year 1860 that the opportunity occurred for undertaking work in the domain of ecclesiastical architecture with which he was

hereafter to be so intimately associated, and this first effort was not on behalf of the Church to which he was so warmly attached, but for the Baptist community of Wantage. This chapel, erected in Mill Street at a cost of £1,000, was "Early Decorated" in style, correct in detail, and well proportioned, and gave evidence of careful study and realisation of the spirit of mediæval work. Before the conclusion of the year he was on more congenial ground, and the contract was signed for a small



ST. COLUMBA'S, HAGGERSTON: BAPTISTERY.
From a water-colour drawing by Axel H. Haig.

mission church in the parish of St. Mary, Haggerston, and in the following spring he was engaged on considerable alterations and additions to the parish church. Next followed schools for the same parish, a temporary mission church at Plaistow, and a "Gothic" parsonage house at Wantage.

Having passed the earliest years of his life in the immediate vicinity of the birthplace of Dr. Pusey it was not unnatural that James Brooks should have been strongly influenced by the great Churchman, and that in after life an intimate friendship should have resulted, and that soon after his arrival in London he should extend the circle of his friends among those of like mind in matters ecclesiastical; hence we find that he became a prominent member of a small band of High Churchmen, among whom he worked enthusiastically for the advancement of the principles which they held in common. In this circle a notable figure was Dr. Robert Brett, who was among the first to recognise the talent of their new associate, and to afford an opportunity for its development by procuring the commission for the erection of the Church of St. Michael, Shoreditch, the first of the series of East London churches on which Mr. Brooks's professional reputation so greatly depends. This church, commenced in 1863, was built over a small mission church, which was kept up and used for services in the midst of the building operations until the permanent structure was almost complete; it was designed in a somewhat earlier style than that used for the Wantage Chapel and the work at St. Mary's, Haggerston, and was modified in execution by the substitution of plate tracery in the east window for the bar tracery shown on the original drawings, but there was not yet much to suggest the characteristics of style with which the architect was afterwards for many years so closely identified. A pleasing and unusual feature was the brick and stone flèche surmounting a double chancel arch. After the erection of this church the architect continued his connection with the parish for some years in the capacity of churchwarden, and during his term of office became acquainted with Father H. D. Nihill, who came to the church as curate in 1865, and became vicar two years later. To this friendship it was owing that some time after he undertook the design for the Convent of St. Mary at the Cross, adjoining the church, and later that of St. Mary of Nazareth at Edgware, acting in respect of the first buildings at Shoreditch without payment for his services, and continuing throughout his life an earnest supporter of the good work carried on by Father Nihill, the late Mother Monica, and the devoted sisterhood among the poor and afflicted of East London.

The year 1864 witnessed the removal of the office to No. 11 Searle Street, Lincoln's Inn, and the commencement of the Church of St. Saviour, Hoxton, in which we find for the first time the distinctive character which marked the strong individuality of the best of Mr. Brooks's work, and which reached its fullest development in the course of the next three years, culminating in the Church of St. Columba, Haggerston, built in 1867, which stamped the architect as a man of original and powerful genius.

At this time Mr. Axel H. Haig, who has since earned so great a reputation for his beautiful etchings of architectural subjects, was engaged by some of the leading architects of the day to prepare illustrations of their works, and Brooks was among those who availed themselves of the talent of the young artist. In a recent letter Mr. Haig writes: "I illustrated mostly his church work, and only remember that they were among the very best Gothic designs I came across in those days, according to my then comparatively uncultivated judgment. Probably I should think so now too, in spite of the many opportunities I have since had of studying the best Gothic work in Europe."

The *Church Builder* of January 1870 devotes an illustrated article to a description of this series of buildings, and the annexed extracts well express the conditions under which they were produced and the spirit which inspired the promoter, Robert Brett, and his architect:—

> A group of churches in the East of London, designed by Mr. James Brooks, has excited considerable interest in the minds of architects, as well as of the general public, for their successful novelty, boldness, and dignity of style, combined with unusual solidity and excellence of execution, and great economy of cost.
>
> They were all required to be cheap churches, the headquarters of mission work in very crowded and squalid localities. These data involve conditions difficult to reconcile, since in the opinion of those who promoted their erection, and in the opinion of the architect himself, it is not sufficient that mission churches in squalid neighbourhoods be simple, unpretending buildings which will just afford comfortable room and shelter for the poor and ragged population of the surrounding lanes, courts, and alleys. On the contrary, in their opinion, a mission church amidst the crowded houses of a low city quarter ought to be a conspicuous building, which will overtop all surrounding buildings and keep the whole neighbourhood perpetually in mind of its existence among them. Then it should be grand and dignified in its architectural effects, proclaiming to the poor ignorant people in a way they can understand that it is a house of God erected in the midst of them. Then it should be beautiful and attractive in its general aspect and its services, first to attract them to the house of God and then to give them perpetually in God's house a refuge from the meanness and squalor of their own homes and of their whole surroundings. Given these desiderata, and add to them that the church shall also be solid and substantial, and it will be understood how difficult it is to combine with them the further condition that it shall be cheap.

In an article on "Der neuere protestantische Kirchenbau in England" Herr H. Muthesius refers to this period as follows:

> James Brooks hat seine Lorbeeren durch eine Reihe von vier nicht weit von einander stehenden grossen Kirchen in London bereits zu Anfang der sechziger Jahre erworben. Damals handelte es sich darum, in den dichtbevölkerten,

ST. COLUMBA'S, KINGSLAND ROAD, HAGGERSTON.
From a pencil drawing by Axel H. Haig.

im nordöstlichen London gelegenen Bezirken Hackney, Shoreditch, Hoxton und Haggerston der Kirchennoth durch eine Reihe von Neubauten abzuhelfen. Dieser Plan, dessen Durchführung vorwiegend der Thatkraft eines hochherzigen Privatmannes, Robert Brett, zu verdanken ist, ist architektonisch so gut verwirklicht worden, wie es in gleichen Fällen nicht oft vorkommt. Das von dem damals noch jungen James Brooks Geschaffene gehört zu dem Erfreulichsten, was der neuere englische Kirchenbau aufzuweisen hat. Wie so oft, war auch hier gerade die in Anbetracht der geringen Baumittel nothwendige Beschränkung der Sporn zu Anstrengungen in einer besondern, der Ursprünglichkeit des Geschaffenen heilsamen Richtung. Alle diese Kirchen sind in der Architektur durchaus selbständig, sofort die Eigenart eines von vornherein ausgesprochenen künstlerischen Charakters verrathend.

The Church of St. Columba, Haggerston, illustrates its author's power; it illustrates also one of his weaknesses, an occasional want of judgment in matters of construction which resulted in partial failure on several occasions. In this instance the nave arcade was designed with circular brick piers with slender stone shafts on four sides; and as the weight of the superstructure gradually increased the compression of the joints between the courses of brickwork threw so much strain on the rigid shafts that they were badly crushed and the columns had to be renewed. In the reconstruction the brickwork was abandoned and the central pier was built up with drums of stone with sheet lead in the joints instead of mortar. The effect of the new piers was not so pleasing as that of the original ones, as may be seen by comparison with the responds in which the brick centre remains; the carving intended in the caps has never been executed, and additions have been made in the interior which would hardly have been approved by the original designer. But in spite of these disadvantages it retains a wonderful charm which places it among the masterpieces of modern architecture, few of which have caught so entirely the spirit of the mediæval designer.

The church of St. Chad, Haggerston, built at this period, possesses a charming south chapel in reference to which it is now rather curious to read in the before-mentioned article in the *Church Builder*:

> A second altar is placed in it, and it is used for the daily celebration of the Holy Communion. We are assured there is no occult intention in having this second altar, that it is simply used as a matter of convenience; there are but few people at the daily celebration; this little chapel when lighted by a few gas lights is bright and cheerful, and the worshippers are brought together in it; while it would have a cold and depressing effect if the service were performed in the great sacrarium, with no choir in the stalls and the few worshippers scattered about the great and half-lighted nave.

At the opening meeting of the R.I.B.A. for the Session 1866-67, held on 5th November 1866, the President, Mr. A. J. B. Beresford Hope, announced that the Secretary had before him the longest list of names to be proposed for election that he had ever known. First on this list came the name of James Brooks, nominated for the Fellowship. On the same evening which witnessed the election of the future "Royal" Gold Medallist the President congratulated the members on the announcement of her Majesty's permission to use the word "Royal" in the title of the Institute.

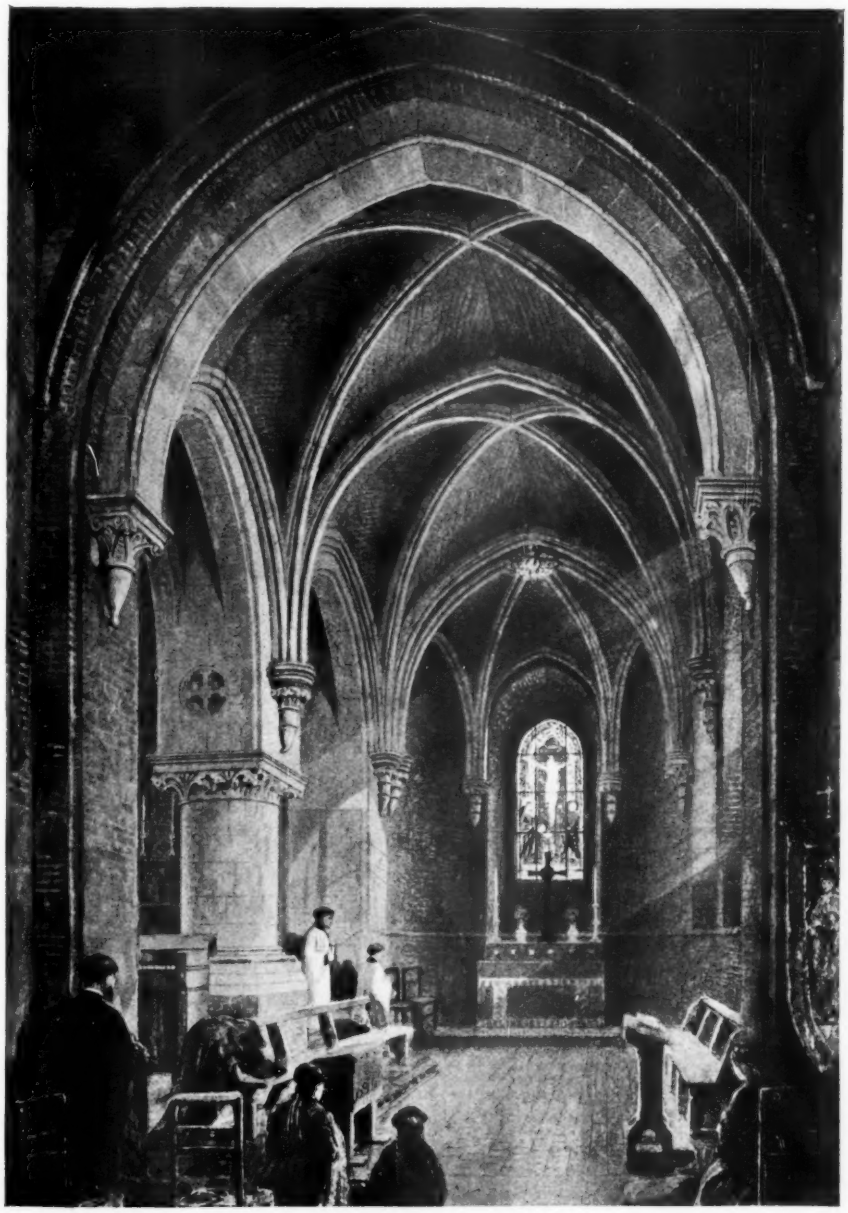
It was in the year 1875 that the practice was transferred to the offices in which it has been carried on continuously until the summer of the present year (1909). The block of buildings comprising Nos. 33 and 35 Wellington Street, Strand, had just been rebuilt, and the first and second floors occupied by the English Church Union, who were the first tenants, and a few weeks later (8th May) Mr. Brooks took possession of three rooms on the third floor, where he worked until failing health necessitated his retirement. His own workshop, which he always considered one of the best lighted drawing offices in London, was a room of moderate size with a large window facing almost exactly north and commanding a view bounded by the flank of the opera house and the dome of the Floral Hall: the walls were hung with illustrations of his works, including perspectives by Axel H. Haig and F. G. Knight; the furniture was plain and massive, some pieces being of his own design, and conspicuous among it was the large drawing board at which he himself continued to work on details and full-size sections up to the last years of his life. Everything was plain and businesslike to a degree. Probably in those days few people found any cause of complaint in the three flights of somewhat steep stairs which lead to this sanctum, least of all did its sturdy owner, though later on with advancing age and enfeebled health they became a severe strain, and were at last a bar to his attendance at the offices, as his medical attendant gave strict orders that he should not ascend them; but in these degenerate days of luxury and lifts their effect on the average client is much the same as that attributed to the "streets of stairs" of Valletta, and many, especially the younger men, reach the third story breathless and anathematising. After an existence of a little more than thirty-four years the connection of the practice with Wellington Street has been severed and the offices transferred to a more "up-to-date" building.

James Martin Brooks, the son, whose birth has already been alluded to, after receiving his early education at Wantage Grammar School, entered Merchant Taylors' School, but was obliged to leave in consequence of the development of hip disease, which necessitated a long confinement to bed and a consequent interruption of his studies, which were resumed some two years later under a private tutor; it was not until he reached the age of nineteen that he was prepared to enter his father's office. He then became a student of the Royal Academy, and was elected A.R.I.B.A. in 1881.

In February 1881 Mr. Brooks attended for the first time at a meeting of the committee of honorary consulting architects of the Incorporated

Church Building Society, having been appointed a member of that committee at the close of the previous year. His services as member, and later as chairman, were much valued by his colleagues, and the connection was continued for over twenty years, the last meeting at which he attended having been held only four months before his decease.

In 1884 Mr. Brooks was engaged on the most



ST. CHAD'S, HAGGERSTON: MORNING CHAPEL.
From a water-colour drawing by Axel H. Haig.

important of his works of restoration. The Church of SS. Peter and Paul, Northleach, a typical example of a Gloucestershire church of the fifteenth century, had fallen into a wretched state of dilapidation; the fine open timber roofs were in a dangerous state, and much of the walling was in urgent need of

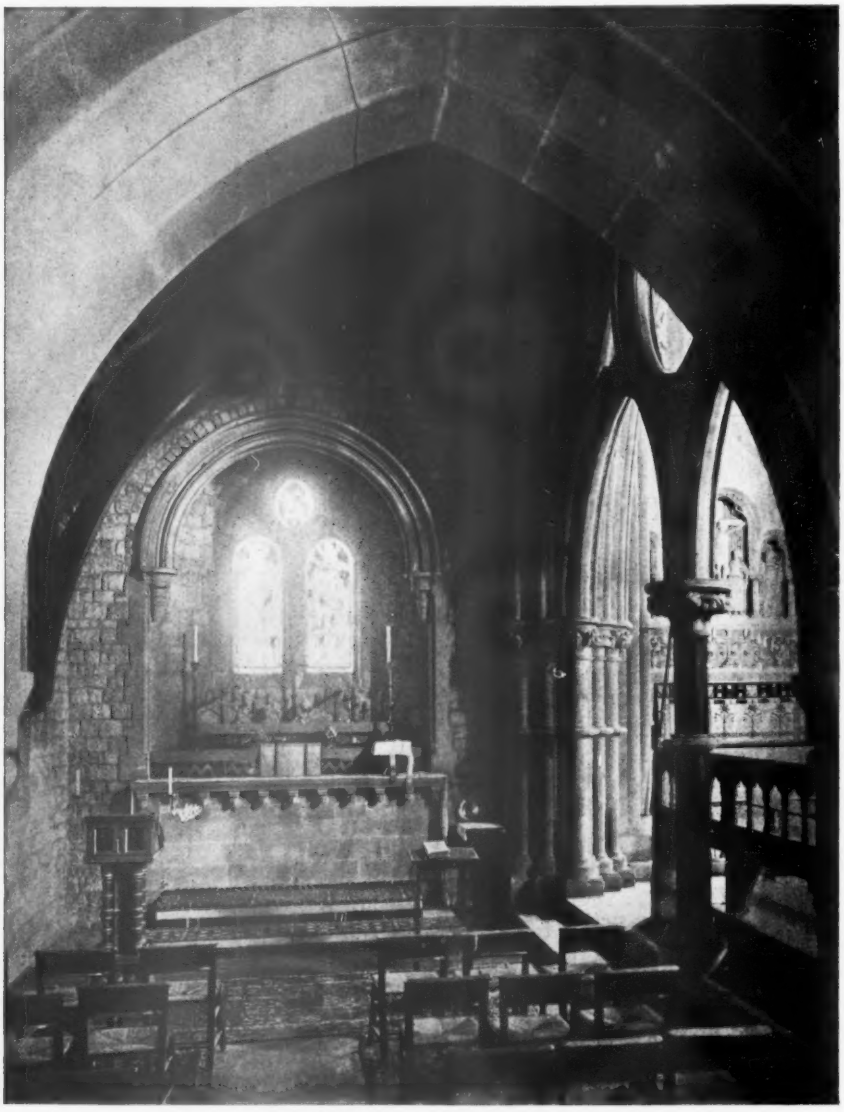
ST. ANDREW'S, PLAISTOW: SOUTH-EAST VIEW. TOWER BUILT ONLY TO JUST ABOVE RIDGE OF NAVE ROOF.

repair. The restoration was a work of strengthening and repairing rather than of design, but it is probable that the study of a later style necessitated in carrying out the work may have been the determining cause of the adoption of this style in a few of the churches designed soon after.

About the same time he was commencing the rebuilding of the Church of St. Michael, Coppenhall,

ST. ANDREW'S, PLAISTOW.

Cheshire. Coppenhall, now practically a suburb of Crewe, is the mother parish out of which that busy centre has been taken. A chapel existed in the thirteenth century, and about the year 1250 the lord of Copenhale presented it to Roger, Bishop of Coventry and Lichfield, from which date it became a chapelry of Wibunbury until it was constituted a separate benefice in 1373. Of the original edifice there is no record; it was succeeded, about the reign of Elizabeth, by a timber and plaster church of small size, of which an old view exists. This was superseded in 1821 by a small brick church, consisting of a low, long nave and chancel, with a small tower at the west end. The population at this time was 450, and the place was so out-of-the-way that a local saying asserted that when the road to London



ST. ANDREW'S, PLAISTOW: MORNING CHAPEL.

should pass through Coppenhall the world would come to an end. But when at length the railway came to the place and the world did not come to an end in fulfilment of the prophecy, the conditions of the district soon changed. Two new parishes were separated from Coppenhall under the designation of Christ Church and St. Paul, Crewe, and in spite of this the population of the old parish grew so rapidly that the small church was no longer commensurate with its needs, and in 1883 Mr. Brooks was requested to design an inexpensive brick church, of which the eastern portion could be built as a commencement, retaining the old nave until funds allowed of the erection of another section. The instructions particularly stipulated that the new building should not be lofty, but the architect, with characteristic independence, designed the church with a chancel 60 feet high to ridge, and with transepts nearly as lofty. The effect of this block rising boldly above the diminutive nave was striking and curious, but it is now gratefully acknowledged that the departure from the letter of the instructions was

CONVENT OF ST. MARY-AT-THE-CROSS, SHOREDITCH.

fully justified, and that the architect's judgment was correct in determining its proportions in consideration of the nature of the site.

Into the first competition for the new Cathedral at Liverpool James Brooks entered with great energy, the importance of the subject counterbalancing the want of sympathy with the general feeling in matters ecclesiastical of the promoters, though in conversation with intimate friends it was his custom to refer to Liverpool as "Galilee of the Gentiles." The plans, elevations, and sections ($\frac{1}{16}$-inch scale) were drawn with a delicacy and minuteness of detail most unusual in competition work, and involved a hard grind on the part of the architect, his son, and assistants. The perspective drawings in pen and ink were mainly the work of Mr. F. G. Knight, and were something of a *tour de force* in respect of rapid production. These were all made familiar after the competition by illustrations in the professional papers, but lost much of their delicacy in the reproduction. Some washed drawings of minor portions of the design were also prepared by Mr. Knight, and, as it is believed that these have not been hitherto published, two are reproduced here [pp. 510–511]. The result of the competition caused bitter disappointment, and the assessors' award was for a long time regarded almost in the light of a personal affront.

In 1888, on the death of Mr. Joseph Clarke, F.S.A., Mr. Brooks was appointed by the executors to carry on the works in progress, and also succeeded to the position of Diocesan Architect for Canterbury, rendered vacant by Mr. Clarke's decease.

CHURCH OF THE ANNUNCIATION, CHISLEHURST: CHAPEL OF ST. GABRIEL.

The name of James Brooks had become so entirely identified with the phase of early Gothic in which he had designed all his most successful work, that it came as a surprise, almost a shock, to those interested in church architecture when he produced his design for the new parish church at Hornsey in the style of the fifteenth century. This was the most successful of the three churches which he built in the Perpendicular style, but even in it we feel that the architect was expressing his

ideas in a language not entirely familiar, and we detect here and there the "brogue" of the earlier period.

The year 1892 was an eventful one, bringing with it a change in the constitution of the office, a severe bereavement, and an important mark of distinction accorded by his colleagues of the R.I.B.A. The first of these events was the establishment of a partnership with J. Martin Brooks as junior member, under the style of James Brooks and Son, though work was still occasionally carried out by father or son in his own name instead of that of the firm. On the 31st of August Mr. Brooks lost his first wife. At the election of officers of the Institute in June Mr. Brooks was chosen Vice-President, an office which he held until 1896. It was during his term of office as Vice-President that he was awarded the Royal Gold Medal for Architecture, which was presented at the General Meeting on the 24th June 1895. The President, the late Mr. Penrose, in his Address referred to the Medallist as follows:—

> The first and very agreeable duty which we have before us this evening is, as you are aware, that of presenting, in Her Most Gracious Majesty's name, the Royal Gold Medal to the man of your choice. He is an architect whose works fully entitle him to receive it, and we may feel the greater pleasure in conferring the honour because the recipient is one of our own Body.
>
> He commenced practice on his own account about 1852, at first—as was natural—in a comparatively humble way, but soon established for himself the career in which he has been so much distinguished, and in which he has enriched the neighbourhood of London, and also many country districts, with some of the handsomest ecclesiastical structures which have been erected during the last thirty years.

Mr. Brooks's somewhat lengthy reply was prefaced by his deprecating the idea of the recipient of the Royal Medal being expected to make a speech, and suggesting that it would be more to the purpose if he were provided with a blackboard and called upon to show his powers of sketching and designing; then followed expressions of gratitude for the mark of distinction implied in the presentation, and of hope that his future work might not be unworthy of one whom the Institute had so honoured. After some remarks on the duties and responsibilities of an architect, and the difference in the facilities for training and systematic study at that time as compared with what existed in his own student days, he said, "In conclusion I am grateful to you for your kindness in listening to a man who is not an orator, and does not pretend to say things in other than a commonplace way; but I feel strongly because I love the art which I have

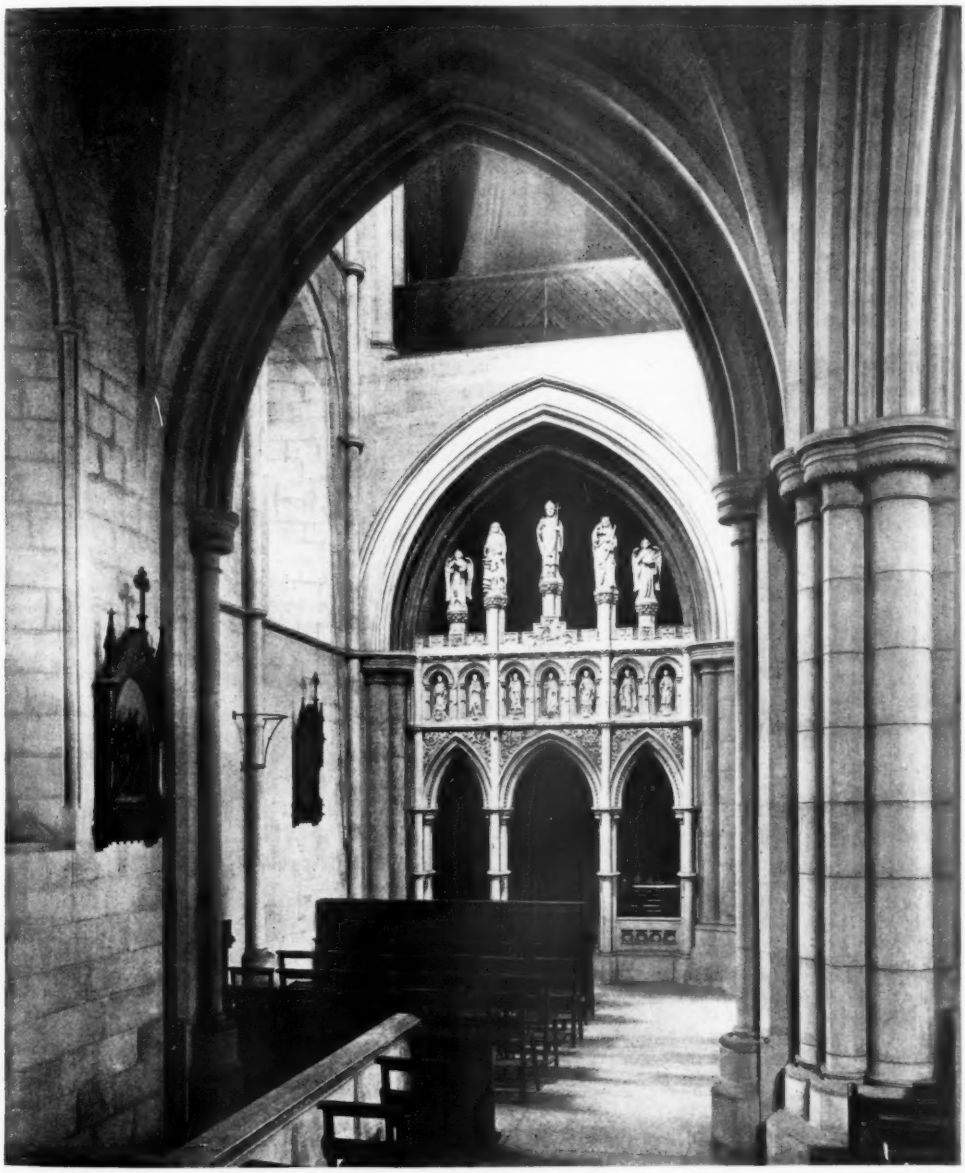
CONVENT OF ST. MARY OF NAZARETH, EDGWARE.

practised for so many years. I have tried to impress upon my works something of the individuality of the man who has designed and carried them out."

The parish of Charlton by Dover was possessed of a small and inconveniently situated church mainly dating from 1827, though retaining some portions of an older structure. With the growth of population this building, in spite of the possession of three galleries, became inadequate for the requirements of the parishioners, and at length it was determined to build a large new church, the funds for which were started by a generous gift of £2,000 from a gentleman unconnected with the parish. To Mr. Brooks this was a congenial task, for the parish had to him a special interest owing to its connection with his old neighbour and later friend Dr. Pusey during his suspension at Oxford. Hence it arose that he presented to the new church a handsome altar with marble mensa as a memorial to his late wife. The day for the consecration of the church arrived, the church was nearly full, when at the last moment the Bishop noticed the marble slab and required its removal before the service was proceeded with. The congregation were surprised after some delay by the entry of

ST. MARY OF NAZARETH, EDGWARE: CONVENT CHAPEL.

twelve labourers, who proceeded to the altar, lifted the slab, and reared it against the chancel wall, replacing it by some planks laid over the frame of the altar. The service then proceeded, but the donor of the altar was so overcome by vexation and grief that he left the church before it commenced and returned at once to London. The same evening the labourers replaced the mensa on the frame, where it has rested undisturbed to the present time.



CHURCH OF ST. JOHN THE BAPTIST, HOLLAND ROAD, W.: VIEW ACROSS TRANSEPT SHOWING SCREEN OF NORTH CHAPEL.

With advancing age it became impossible to give the same close attention to work, and Mr. Brooks began to consider the desirability of taking an additional partner into the firm, and after a serious illness in 1900, in consequence of which his medical attendant forbade the ascent of stairs, he determined on taking this course. Negotiations were therefore opened with a former pupil, son of the incumbent of one of the early East-end churches, who had established a flourishing provincial practice. It was at length arranged to continue the country practice in connection with the Wellington Street office, and the partnership was entered into in July 1901. From this time the head of the new firm was seldom able to attend to work, and within three months the end came. Mr. Brooks expired at his residence "The Grange," Park Lane, Stoke Newington, on the 7th October, at the age of 76 years. Many years before he had expressed a wish to be interred in the cloister garth of the convent of St. Mary of Nazareth at Edgware, and one can hardly imagine a more fitting resting-place for the body of the architect than the peaceful little God's acre in the shade of what would have been, if completed, his most important work. His epitaph might then have concluded with the same words as Sir Christopher Wren's, but unfortunately the intention was not carried out. A solemn requiem was celebrated at St. Faith's Church, Stoke Newington, with which he had been long intimately connected both as architect and churchwarden, and the interment was at Colney Hatch Cemetery.

Resolutions of condolence were passed by the leading architectural societies and other bodies connected with art and ecclesiology. The annexed extract from the minute book of the Incorporated Church Building Society, furnished by the courtesy of Mr. Joseph Monday, the late secretary, may be taken as typical of the general tone of esteem shown not only in such official resolutions, but also in numerous private letters sent at the time:—

Extract from the Minutes of a Meeting of the General Committee of the Incorporated Church Building Society, held at 7 Dean's Yard, Westminster Abbey, S.W., on Thursday, 21st November 1901, the Reverend Canon C. F. Norman in the chair:

Mr. H. W. Mozley moved, and Mr. F. H. Rivington seconded, and it was carried unanimously:—"That the Secretary be requested to write to the son of the late Mr. James Brooks, assuring him of the deep sympathy of the Committee with him and the rest of the family in the loss they have sustained, and of the high value which they placed upon the services which for so many years Mr. James Brooks rendered to the Incorporated Church Building Society as member and Chairman of the Committee of Honorary Consulting Architects."

Mr. Brooks left one daughter and three sons. The eldest son, James Martin Brooks, already referred to, died in 1903, only surviving his father two years and three weeks. The second son is a member of the Stock Exchange. The third son, Dr. W. Tyrrell Brooks, is a physician practising in Oxford, and one of the lecturers in medicine at the University.

Apart from his work in the domain of architecture James Brooks's chief interest lay in working for the advancement of the Church, and especially of the High Church. During his life he collected large sums for the building of churches in poor districts in London. He was a member of the Council of the English Church Union and a staunch supporter of the principles of that body.

He was churchwarden for many years at St. Matthias', Stoke Newington, and went through the troublous times when mobs invaded the church on account of its ritualistic services.

Subsequently he acted as people's warden at St. Faith's Church, Stoke Newington, from 1890 to 1892, and as vicar's warden from 1895 until his death. Mr. Brooks's character both as Churchman and architect, as it appeared to those with whom he was associated in these capacities, is well set forth in the annexed letter lately received from the Rev. W. Cawley Reid, Rector of Coppenhall:

27*th January* 1909.

The late Mr. James Brooks struck me as above all else a truly religious man. He looked at everything from the point of view of a devout Churchman. He was a convinced and pronounced believer in the Sacramental system of the Church, and desired to see the impress of that belief stamped upon all the architecture and arrangements of his churches.

He was a very hard-working man. I remember seeing him one day in his shirt sleeves working at some drawings in the foreman's office close to our new buildings. He seemed at once very thorough and very quick. He had a wonderfully active brain. His physical energy was also quite remarkable. I recollect him once when quite an old man staying a Sunday with us, and after attending our two morning services taking a long round which astonished us. I forget how many churches he had managed to see.

Once when our foreman was suggesting that, as no one could see some woodwork ornament in the chancel roof, it was quite superfluous and might just as well be omitted, he replied sharply, "But if men cannot see it, *angels can*." In spite of his advanced age, his handwriting was wonderfully firm and regular to the last. You might have to wait for an answer, but when you got it, it was always to the point.

He was a very kind man, quite conscious of his clients' difficulties in the collecting of funds, &c., and so generous at times as to be, I fear, unfair to himself. I remember how, after a long interval, I had again occasion to write to him. His reply might have come from some old friend whom one had known all one's life! There was such a ring of genuine gladness on hearing from me once more.

When he visited us for the first time, and saw the site of the old mother church at Crewe, he took in the situation at once, rightly pointing out that, even if we had to wait many years before we completed it, the new church ought to be of dignified proportions to be worthy of its position. How would he have rejoiced to see it to-day!

Another side of his character is shown in a letter from a correspondent who writes:

When I was first going in for a District Surveyorship, he said simply and quite unsolicited, "You may add my name if you like" when it was a question of testimonial. I necessarily had kindly feeling in response for kindly spirit shown frequently. There was a kind of amusement at

his being so much in request personally. "It somehow gets abroad quickly that Mr. Brooks is now in his office, and a crowd of visitors comes in suddenly." His personal attention to every detail of every work was known universally.

Mr. F. G. Knight writes as follows :—

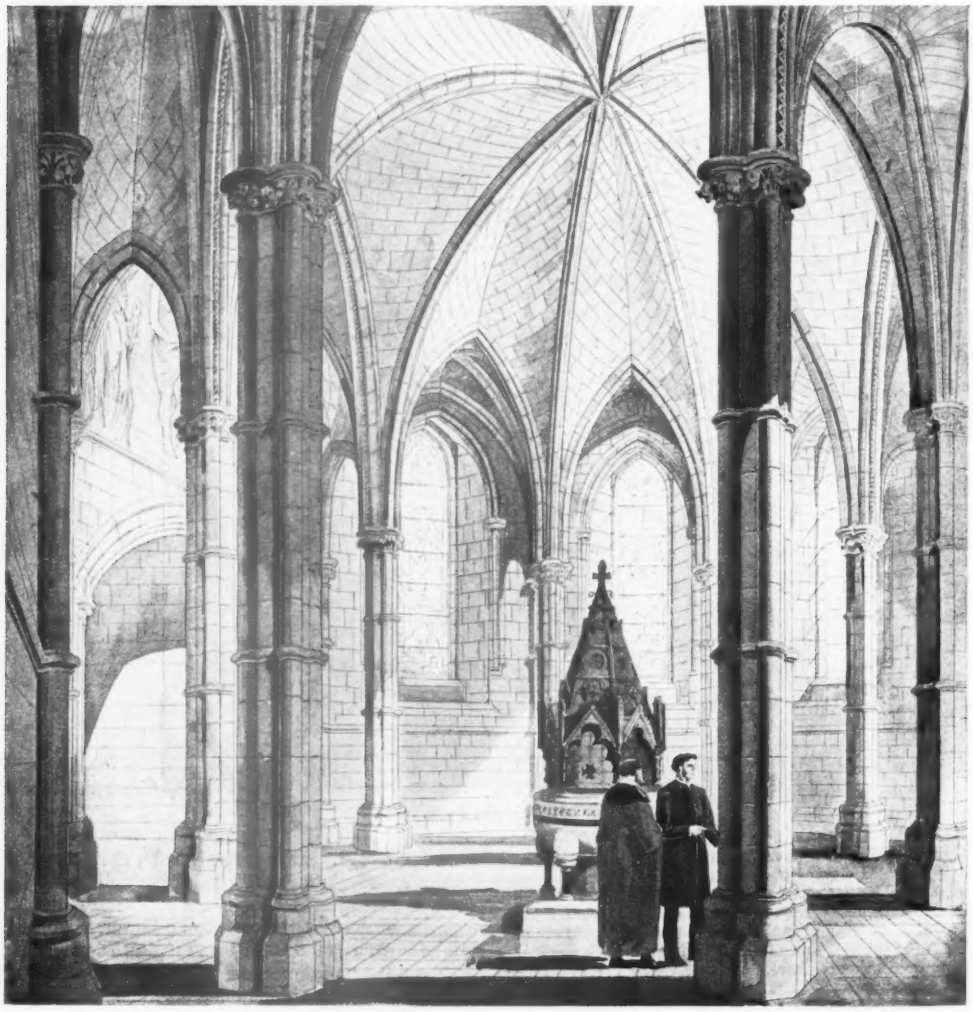
For many years I had the pleasure of being counted amongst his few professional friends, but it was practically only in the office that we met, and then generally to discuss some projected view of one of his designs of which he had asked my assistance in making a perspective drawing. On these occasions he rarely, if ever, discussed other matters, being entirely wrapped up in his own work, and upon no single occasion can I recall his offering an unkind criticism upon the work of others. His intuitive gift was proportion, even to details, not allowing a foot rule to govern him. As he once said to me, "Design first and let the surveyor and builder do the scaling."

ST. FAITH'S, STOKE NEWINGTON.

As to method in designing he once frankly stated "I do not know how I design." In some of his earliest and best work one can almost feel that the design must have been something of an inspiration and have come almost spontaneously, but this was far from being the case in later work, which was often produced by a process of trial and rejection involving the preparation of numerous drawings many of which were cast aside long before they were completed. This was especially the case when it came to details; a drawing might be well advanced, and when inspected appear unsatisfactory, and he would then have it redrawn to a different scale, and this in turn, if still unpleasing, to a third scale, often with scarcely any modification from the original form. Very little guidance was afforded by considerations of construction, as from the want of more systematic early training, which in later life he often deplored, his methods of construction were

somewhat governed by rule of thumb, and generally received principles set aside or ignored, as when in a doorway with pointed arch enclosing a tympanum supported by a one centred segmental arch, the former was drawn with a key-stone, and the latter with a vertical central joint, or when projecting buttresses on a clerestory wall were corbelled out over the centres of the arches below. It must also be owned that he was not always ready to acknowledge a mistake when his attention was drawn to it. In one instance where a section through the morning chapel had been drawn without reference to the chancel arcade the clerk of works asked permission to raise the roof plate a couple of courses to clear the label of the arches, but was not allowed to depart from the drawing, so the plate was fixed at the level shown and the top part of the stone label was cut through in a most unsightly manner.

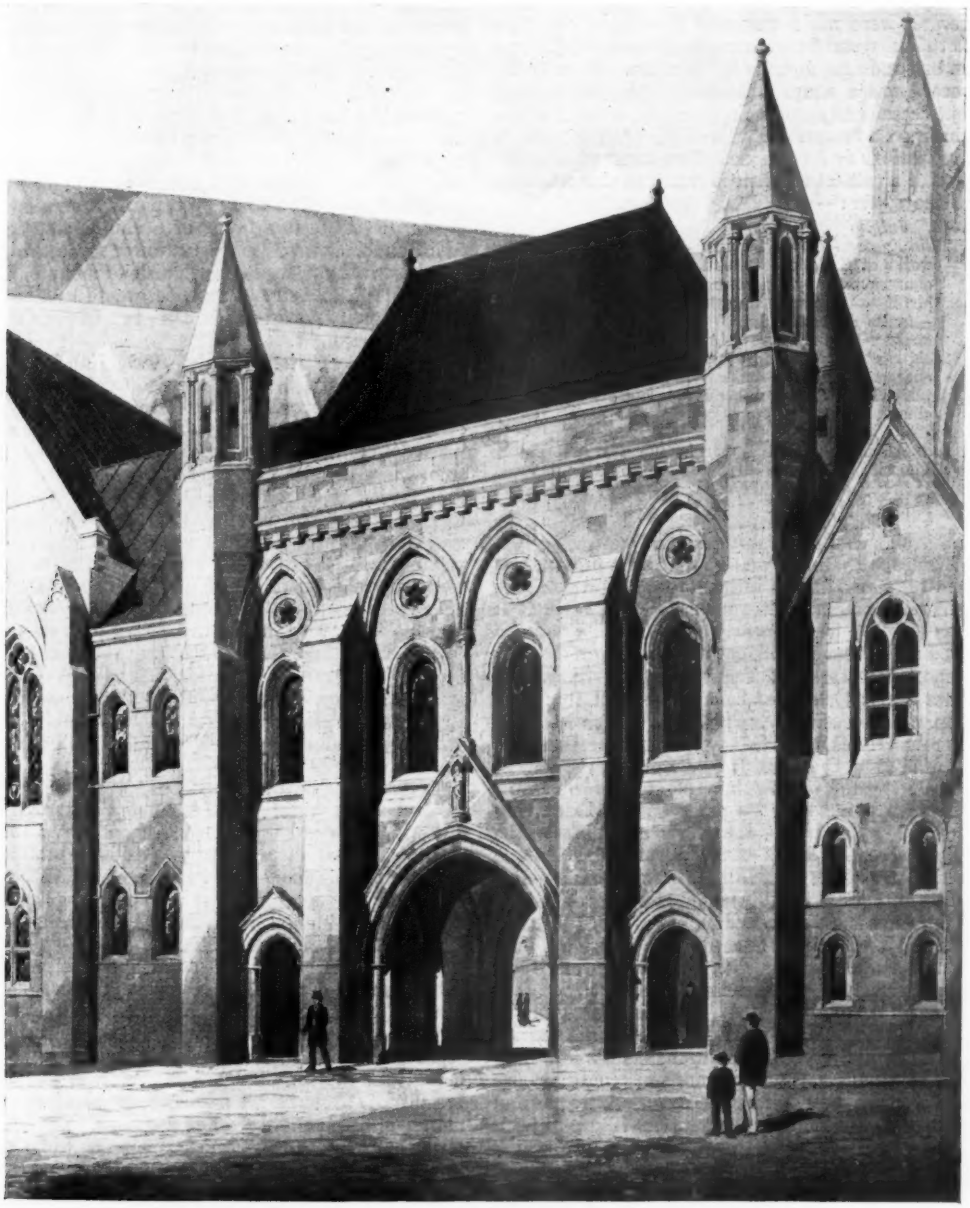
Mr. Brooks used a greater variety of scale than is generally considered desirable, and the effect of a multiplicity of scales when used in one and the same job was often somewhat confusing. General drawings were usually drawn to $\frac{1}{8}$ inch or $\frac{3}{16}$ inch



LIVERPOOL CATHEDRAL COMPETITION DESIGN : INTERIOR OF BAPTISTERY.
From a drawing by F. G. Knight.

scale, and details to every possible multiple of these scales; and as often no note was made on the drawing as to which was used, it was not always easy to determine.

Little care was taken as to keeping office records. Comparatively few letters were copied, and these were indexed on a system which made it extremely difficult to find the copy of any one which might



LIVERPOOL CATHEDRAL COMPETITION DESIGN: CONSISTORY COURT, FROM ST. JOHN'S LANE.
From a drawing by F. G. Knight.

be required subsequently for reference. Office diaries were numerous, but entries in them few. Mr. Brooks himself generally had two at least in each year, entries being made sometimes in one, sometimes in the other, but few in either; as an example, in the year 1885 the total number of days on which records were made was only fifty-three, counting both books, and five separate months were left blank in one and nine months in the other. Usually the record was a simple mention of the day's work, but occasionally something further is noted which throws an interesting side-light on the writer's occupations and opinions. The annexed description of a painful incident is terse and characteristic of the writer :—

1884. *July.*

25*th*, *Friday.*—To S. Leonards-on-Sea to examine the works at S. Peter's Church and to enquire into the charges made by the contractor and his men against Mr. K——, the clerk of works, a long and angry dispute —faults on both sides, D——'s men threatening to strike if I did not get rid of K——.

26*th*, *Saturday.*—Same dispute as yesterday. K—— charges Mr. D——'s son of trying to bribe him. Eventually I decided to remove K——, and send him to a church at Kensington.

August.

3*rd*, *Sunday.*—Early this morning poor Mr. K—— hung himself; be grieved to think he should be removed from S. Leonards. May God have mercy on him and forgive him his sins.

Mr. James Brooks's professional career, though attended with much well-merited recognition, was one of many disappointments. In spite of the general appreciation in which his work was held it was his fate to see nearly every design which he produced either greatly cut down or shorn of some important feature, and frequently even in its reduced state stopped short of completion. Of the more important works probably none was carried out more nearly as intended by its designer than the Church of St. Columba, Haggerston, the only variations being the substitution of stone for brick in the nave piers, and the omission of the carving throughout, and this church is undoubtedly the most successful of his executed works, and the one which enables us most fully to recognise the genius of its author. Probably his greatest regret was the failure to secure the opportunity afforded by competition for Liverpool Cathedral, but it is more than doubtful whether success in this matter would have added greatly to his permanent reputation. It is more to be regretted that his fine design for the conventual buildings at Edgware was not carried out in its entirety. The church alone would have ranked as his most important work, both in size and beauty, but, unfortunately, the only portion of it built was that destined in the future to form the Lady Chapel of the complete structure, which at present does duty as the Chapel of the Community. The completed church would have been a lofty and dignified fane of exquisite proportion, and in the truest spirit of mediæval art. Of the great cloister of Cistercian simplicity only one complete walk and a few bays of a second have been erected.

It was not, however, Mr. Brooks's way to waste willingly any piece of design on which he had spent thought and labour, and when an important feature, such as a tower, was cut out of one design it was preserved and tacked on to another at some future opportunity, but generally to meet with the same fate again. It militates greatly against the usual theories of design for special purposes, and speaks volumes for Mr. Brooks's powers of adaptation that he was enabled to use the same design for a tower with scarcely any modification in such dissimilar positions as (i) the central tower of a cruciform church standing in a fairly open position on a level site; (ii) the western tower of a church standing in a London street; and (iii) a tower separated by a narrow lobby from the south aisle of a church in an undulating country. The effect would have been almost equally good in each case, but in none has it been carried out.

Mr. Brooks's work divides itself into several periods, each of which is distinguished by the prevalence of some well-defined characteristics. Neglecting the earliest efforts in respectable commonplace distinguished even in its regulation forms by something of pleasing proportions, we find the first period of about ten years (1863-73) during which all that was best, most original, and most characteristic in his style reached its highest development. Having a profound admiration of the work of the Egyptians and Greeks he appears to have managed to import something of their spirit into his work, though his chief inspiration was, of course, drawn from the best works of the thirteenth century in France and England. The work of this period is distinguished by great breadth of treatment, largeness of detail, without, however, anything of coarseness, and a happy feeling for pleasing proportion.

The second period, extending to about 1885, is marked by less originality of treatment and a closer following of precedents, chiefly French, though this was to some extent unconscious on his part; thus in the report on his design for Liverpool Cathedral he wrote "Though guided by my study of the best examples of English architecture I have from my study of Continental work adopted *one* of its features," whereas the whole design was teeming with features drawn from French sources. The work of this period was frequently not quite successful in proportion, several of the churches especially being excessive in length compared with height and width. There was a marked loss in breadth of effect and a tendency to emphasise and unduly multiply the horizontal divisions. The best of the churches of this period, and in point of size the most important of his executed works, was the Church of St. John Baptist, Holland Road, Kensington, a large and handsome church vaulted throughout, but with no very marked originality

Yours sincerely

James Brooks

either in general treatment or detail. In some of the work of this date there was rather too much provision of a "dim religious light," often hardly to be distinguished from darkness, and the doors were not usually in accordance with modern ideas of facility of egress.

The third and last period was largely one of unrest and experiment. The Renaissance Chapel at Wynyard was as respectably uninteresting as the Italian villa of 1852, and the Queen Anne stables and hotel were not works of a high order. The "Perpendicular" churches were not a congenial task, and suggested a want of familiarity with the style, the best and most happy design being one prepared for the chancel of Plaxtole Church, Kent, in which the tracery of the east window was continued up to the angles and along the return sides by a series of panels. But there were two churches in the favourite "Early" style which showed the germ of a new development that might have led to great results. There was greater lightness of treatment, especially in the interior, and a tendency to give more importance to vertical lines and to introduce long raking lines in the buttresses. The first of these was the Church of the Holy Innocents, Hammersmith, which was practically completed; the second was All Hallows, Gospel Oak, which would have carried out the treatment more fully, but unfortunately remains in a deplorably unfinished state.

The author's sincere thanks are due to the several correspondents from whose letters extracts have been made in the above sketch, and also to the Rev. C. H. V. Pixell, the Rev. S. F. Green, the Rev. Father Nihill, and Dr. W. Tyrrell Brooks, who have afforded valuable assistance.

APPENDIX A.

List of the Principal Works carried out by Mr. James Brooks.

The dates given are in some cases those at which the designs were prepared, in others of the actual commencement of building.

1851. Shop front, High Street, Stoke Newington.
1852. House at East Hendred, Berks.
1853. Cottage at Stanford-in-the-Vale, Berks.
1857. House at Wantage.
1858. Alterations to Royal Philanthropic Society's House, Kennington Lane.
1859. House at Reading.
1860. Chapel Mill Street, Wantage.
" Mission Church, Haggerston.
1861. St. Mary's Church, Haggerston. (Alterations.)
" Mission Church, St. Andrew, Plaistow.
1862. Schools, St. Mary, Haggerston.
" House at Wantage.
1863. Church of St. Michael, Shoreditch.
1864. Church of St. Saviour, Hoxton.
" Schools, St. Columba, Haggerston.
1864. Church of St. Andrew, Sandford-on-Thames, Oxon (Restoration.)
1866. Alterations to 23, Lincoln's Inn Fields.
1867. Church of St. Chad, Haggerston.
" Church of St. Columba, Haggerston.
" Church of St. Andrew, Plaistow.
" Parsonage, St. Michael, Shoreditch.
1868. Church of All Saints, Northfleet.
" West Hannay Church, Oxon. (Restoration.)
" Church of the Annunciation, Chislehurst.
1869. Church of St. Andrew, Totteridge, Herts. (Restoration.)
1870. Convent of St. Mary-at-the-Cross, Shoreditch (first section of conventual buildings); continued at several subsequent dates.
" Christ Church, Watney Street, E. (Remodelling.)
" School, St. Michael, Shoreditch.
" School, Meysey Hampton, Gloucestershire.
1871. Church of St. Saviour, Mortomley, near Sheffield (Parkin Jeffcock Memorial); won in competition.
" Meysey Hampton Church, Gloucestershire. (Restoration.)
" National School and Master's House, Wolstanton, Staffordshire.
1872. Schools, St. Andrew, Plaistow.
" Church of St. Margaret, Marks Hill, Kelvedon, Essex. (Alterations.)
" Brewery, Wantage.
" Additions to Castle Hill Lodge.
1873. Additions to Humewood, co. Wicklow (large mansion).
" Parsonage, St. Saviour, Hoxton.
" Church of St. Stephen, Avenue Road, St. John's Wood. (Alterations.)
" Parsonage, St. Columba, Haggerston.
" Church of All Saints, Paddington. (Additions.)
" Convent of St. Mary of Nazareth, Edgware (first section of conventual buildings erected); originally styled St. Raphael's Priory. Various sections erected subsequently, but much of the original scheme not yet carried out.
1874. Church of the Ascension, Lavender Hill.
" Church of St. John Baptist, Kensington (first section). Remainder erected subsequently, except the west front.
" Church of St. James, Marston Meysey, Wilts. (Restoration.)
1875. Parsonage, St. Andrew, Plaistow.
" School, Stanford-le-Hope, Essex. (Additions.)
" School, St. Saviour, Hoxton.
" Church of St. Margaret, Lee, Blackheath. (Additions.)
1876. Epping Church, Essex. (Restoration.)
1877. Church of St. Medoc, Doune, Scotland.
" Village Hall, Chislehurst.
1878. Church of St. John, Whetstone, Middlesex. (Additions.)
1879. Private Chapel for the Marquess of Londonderry, Wynyard Hall, Durham (Italian Renaissance style).
1880. Church of the Transfiguration, Lewisham.
" Church of St. Mary, Cainham, Ludlow.
1881. Stables for the Marquess of Londonderry, Brick Street, Mayfair ("Queen Anne" style).
" Church of St. Faith, Stoke Newington (western part of Nave added to Church commenced by W. Burges).
1882. Mission Hall, St. Andrew, Willesden.
1883. Church of St. Michael, Coppenhall, Cheshire (Chancel, Lady Chapel and Transepts).
" Church of St. Peter, St. Leonards-on-Sea.
1884. Church of SS. Peter and Paul, Northleach, Gloucestershire. (Restoration.)

1885. Church of St. Andrew, Willesden.
1887. Church of All Saints, Southend.
" Church of the Holy Innocents, Hammersmith.
" Christ Church, Turnham Green (new Chancel).
1888. Church of St. Mary, Hornsey (Fifteenth-century style).
" Vicarage, All Hallows, Gospel Oak.
" Worth Church, Kent. (Restoration.)
1889. House at Rondebosch, Cape Town (for Mr. W. N. Struben, a rather florid Jacobean design much simplified in execution. The work was carried out by correspondence from the London office).
1890. Church of SS. Peter and Paul, Charlton, Dover.
1891. Church of St. Chad, Wybunbury, Cheshire (Fifteenth-century style).
1892. S.E. Railway Hotel, Deal.
1893. Church of All Hallows, Gospel Oak (Nave with temporary roof and lower part of chancel).
1895. Church of St. Barnabas, Great Tey, Essex. (Restoration and re-seating.)
1896. Church of St. Peter, Hornsey (Fifteenth-century style, western portion only).
1898. Church of St. Luke, Enfield (eastern portion only).
1899. Vicarage, St. Peter, Hornsey.
" Vicarage, St. Luke, Enfield.
1901. St. Faith's Church, Stoke Newington (Lady Chapel).

WORKS CARRIED OUT INDEPENDENTLY BY JAMES MARTIN BROOKS.

1890. Hospital Chapel, Ilford, Essex.
" Elementary School, Harlesden.
1895. St. Giles' Church, Killamarsh, Derby. (Additions.)
1896. Church of SS. Mary and Chad, Longton, Stafford (Chancel and eastern half of Nave).

APPENDIX B.

EXHIBITS.

Royal Academy:—
1886. Willesden, Ch. of S. Andrew. N.E. view.
1889. Liverpool Cathedral. Interior and exterior views of the Chapel of S. John.
" Gospel Oak, Ch. of the Good Shepherd. Interior view with apse.
" Gospel Oak, Parsonage of the Good Shepherd. View.
" House at Rondebosch. View.
1891. Charlton, SS. Peter and Paul. View.
1892. Tonbridge, School Chapel. View.
1893. Deal, South Eastern Hotel. View.
1894. Gospel Oak, Ch. of All Hallows. E. and W. elevations.
1896. " " " " " Interior view.
" Willesden, Ch. of S. Andrew. N.W. view.
1897. Hornsey, Ch. of S. Peter. View.
1898. Enfield, Ch. of S. Luke. View.
1899. " " " East window.

Paris Exhibition:—
1878. Schools of S. Michael and Convent of S. Mary-at-the-Cross, Shoreditch.

Sydney Exhibition:—
1879. Haggerston, Ch. of S. Chad. View of side chapel.
" Schools of S. Michael and Convent of S. Mary-at-the-Cross, Shoreditch.

Adelaide Exhibition:—
1887. Schools of S. Michael and Convent of S. Mary-at-the-Cross, Shoreditch.
" S. Leonards-on Sea, Ch. of S. Peter. S.W. view.

Manchester Jubilee Exhibition:—
1887. Ch. of S. John Baptist, Kensington. Interior view.
" S. Leonards-on-Sea, Ch. of S. Peter. S.E. view.
" Lewisham, Ch. of the Transfiguration. N.E. view.

Chicago Exhibition:—
1893. Ch. of S. Mary, Woolwich. S.E. view.
" Ch. of Holy Innocents, Hammersmith. S.W. view.

Glasgow Exhibition:—
1898. Tonbridge, School Chapel.

Paris Exhibition:—
1900. Enfield, Ch. of S. Luke. East window and reredos.

Saint Louis Exhibition (posthumous):—
1904. Hornsey, Church of S. Mary. View.
" " " S. Peter. View.
" Enfield, Ch. of S. Luke. View.
1904. Gospel Oak, Ch. of All Hallows. View.
" Coppenhall, Ch. of S. Michael. Lady Chapel.

PUBLISHED DRAWINGS.

Abbreviations.—*A.*, The Architect; *A. A.*, Academy Architecture; *B.*, The Builder; *B. N.*, Building News: *B. A.*, British Architect; *B. J.*, Builders' Journal; *C. B.*, Church Builder; *W. E. M.*, West End Magazine; *Z. B.*, Zeitschrift für Bauwesen.

Charlton, Ch. of SS. Peter and Paul:—		
View	*A. A.*	1891.
"	*C. B.*	April 1891.
Elevations, sections and view	*B.*	30th May 1891.
Amended design for tower section and elevation	*B. J.*	2nd April 1895.
Chislehurst, Ch. of the Annunciation:—		
Interior view	*B. N.*	25th Dec. 1874.
" "	*B. N.*	17th Sept. 1875.
Reredos	*A.*	20th Oct. 1877.
Coppenhall, Ch. of S. Michael:—		
View	*B.*	17th May 1884.
Deal, South Eastern Hotel:—		
View	*B.*	17th June 1893.
"	*A. A.*	1895.
Doune, Ch. of S. Medoc:—		
Triptych	*C. B.*	April 1884.
"	*W. E. M.*	Aug. 1896.
Edgware, Convent of S. Mary of Nazareth:—		
View	*A. A.*	1890.
"	*B.*	17th May 1890.
Enfield, Ch. of S. Luke:—		
View	*A. A.*	1898.
"	*B. N.*	16th Sept. 1898.
East window and reredos	*A. A.*	1899.
" "	*B.*	17th June 1899.
Gospel Oak, Ch. of the Good Shepherd (All Hallows):—		
Interior View (with apse)	*A. A.*	1889.
	B.	10th Jan. 1891.
S.E. exterior view	*C. B.*	July 1892.
East and West elevations	*A. A.*	1894.
" "	*B.*	29th Dec. 1894.
S.E. view	*A. A.*	1895.
Interior view (square E. end)	*A. A.*	1896.
Gospel Oak, All Hallows' Vicarage:—		
View	*B.*	23rd Mar. 1889.
"	*A. A.*	1889.
Great Tey, Ch. of S. Barnabas:—		
View	*C. B.*	April 1896.
Haggerston, Ch. of S. Columba:—		
Exterior and interior views	*C. B.*	Jan. 1870.
Interior view	*B. N.*	19th Jan. 1872.
Exterior view	*B. N.*	28th Feb. 1873.
Hammersmith, Ch. of Holy Innocents:—		
View	*B.*	1st Jan. 1887.
"	*C. B.*	April 1887.
"	*Z. B.*	1899.
Highgate, Ch. of S. Augustine (not carried out):—	*Z. B.*	1899.
Hornsey, Ch. of S. Mary:—		
View	*C. B.*	Jan. 1888.
"	*B.*	12th May 1888.
Hornsey, Ch. of S. Peter:—		
View	*B.*	15th Aug. 1896.
"	*C. B.*	Oct. 1896.
"	*A. A.*	1897.
Hoxton, Ch. of S. Saviour:—		
Interior and exterior views	*C. B.*	Jan. 1870.
Interior view	*B. N.*	24th Aug. 1866.
Kensington, Ch. of S. John Baptist:—		
S.W. view	*B. N.*	29th Nov. 1872.
West end with tower	*B. N.*	4th Apr. 1873.
Elevation of west end without tower	*B.*	23rd Apr. 1892.

Elevation of choir screen . . *B.* 29th June 1895.
Reredos . . . . . *W. E. M.* Aug. 1896.
Choir screen . . . . . *Z. B.* 1899.

Kensington, S. Paul (competition):—
Interior view, elevations and sections . . . . . *B.* 15th Jan. 1887.

Kiltegan Church, Ireland:—
New aisle and mausoleum . . *B. N.* 12th Nov. 1875.

Lavender Hill, Ch. of the Ascension:—
View . . . . . *B. N.* 29th Jan. 1875.

Lee, S. Margaret:—
Reredos . . . . . *B. N.* 11th Aug. 1876.
Interior view . . . . . *B.* 30th June 1888.

Liverpool Cathedral . . . . . *A. A.* 1889.
" " . . . . . *B.* 9th & 16th Jan. 1886.
" " . . . . . *B.* 6th Feb. 1886.
" " . . . . . *B.* 6th Mar. 1886.
" " . . . . . *B.* 28th April 1886.
" " . . . . . *B. A.* 5th Mar. 1886.
" " . . . . . *B. A.* 2nd April 1886.

Mortomley, Ch. of S. Saviour:—
View . . . . . *B. N.* 10th July 1874.

Northfleet, Ch. of All Saints:—
Interior view . . . . . *B. N.* 13th Nov. 1874.

Northleach, Ch. of SS. Peter & Paul:—
View . . . . . *B.* 6th Oct. 1883. *C. B.* July 1884.

Plaxtole Ch.:—
View . . . . . *B. J.* 2nd April 1895.

Rondebosch, House at:—
View . . . . . *A. A.* 1889.
" . . . . . *B.* 13th July 1889.

Shoreditch, Convent of S. Mary-at-the-Cross:—
Details of chapel and fittings . *B. N.* 5th & 12th Dec. [1873.

Shoreditch, Ch. of S. Michael:—
Rood screen and candelabra . *B. N.* 28th Sept. 1866.

Southend-on-Sea, Ch. of All Saints:—
View . . . . . *B.* 1st Oct. 1887.

Tonbridge, School Chapel:—
View . . . . . *B.* 14th May 1892.
Plan section and elevations . *B. N.* 19th July 1895.

Willesden, Ch. of S. Andrew:—
N.E. view . . . . . *B.* 2nd Jan. 1886.
" " . . . . . *B. A.* 27th Aug. 1886.
N.W. view . . . . . *B.* 2nd Nov. 1895.
" " . . . . . *A. A.* 1896.
N.E. and N.W. views . . . *Z. B.* 1899.

Worth Ch., Kent:—
View . . . . . *B. J.* 2nd April 1895.

Woolwich, Ch. of S. Mary (not carried out): Interior and exterior views *B. N.* 19th Dec. 1879.

ST. PETER'S, ST. LEONARDS-ON-SEA.